

STATE OF WIRELINE COMMUNICATIONS

HEARING

BEFORE THE

SUBCOMMITTEE ON COMMUNICATIONS,
TECHNOLOGY, AND THE INTERNET

OF THE

COMMITTEE ON COMMERCE,
SCIENCE, AND TRANSPORTATION
UNITED STATES SENATE

ONE HUNDRED THIRTEENTH CONGRESS

FIRST SESSION

JULY 25, 2013

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ONE HUNDRED THIRTEENTH CONGRESS

FIRST SESSION

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STATE OF WIRELINE COMMUNICATIONS

THURSDAY, JULY 25, 2013

U.S. SENATE,
SUBCOMMITTEE ON COMMUNICATIONS, TECHNOLOGY, AND
THE INTERNET,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
Washington, DC.

The Subcommittee met, pursuant to notice, at 10:25 a.m. in room SR-253, Russell Senate Office Building, Hon. Mark Pryor, Chairman of the Subcommittee, presiding.

OPENING STATEMENT OF HON. MARK PRYOR, U.S. SENATOR FROM ARKANSAS

Senator PRYOR. I will go ahead and call our meeting to order here.

And let me first apologize. I was in an appropriations meeting and they needed me for a quorum to get some bills moving, and we are trying to get our appropriations bills moving back on regular order. So I apologize for the delay.

Let me just say good morning and welcome to the Subcommittee. This is the “State of Wireline Communications” hearing. I want to thank all of our witnesses for being here and I want to thank everybody for being here and participating in this to make this a reality.

This is the fourth of the Subcommittee’s so-called “state of” hearings. We have had a series of these to learn about various aspects of telecommunications. They have been well attended by Senators. I know that today we have lots of things going on, including a lot of business on the floor and other committees. So we will see some Senators coming in and out.

I certainly want to welcome Senator Wicker and his great work on this subcommittee and his great work in the Senate.

The public telephone network remains the backbone of our nation’s communications infrastructure. Over the years, there have been innumerable benefits to American individuals and also businesses with that network, and we understand that. And if you look at our economy, you just think about the fundamental changes that have happened because of telephone service and wireline communications. There are just almost too many to enumerate.

But in recent decades, we have also gone from a world of regulated monopolies to a vibrant market that has incumbents, competitors, and over-the-top providers. And if you look back 20 years—the 1996 Telecom Act—the amount of innovation, creation, investment, and advancement in our ability to connect is just truly

astounding. It has been a huge American success story, and it is something that as a nation we all should be very proud of.

And there is one fundamental ideal that has not gone away and that is we want all Americans to be able to have access to this network. We want that when a call is made, we want it to go to the intended person. We want it to be completed and that the network is also reliable for individuals and businesses. And that is also true in time of emergency. We do not want these things to stop and not work when sometimes people need it the most.

But nonetheless, I know that Senator Klobuchar and others have talked about the concern that we have about calls not being completed. That is a real concern especially in rural America. We also see this continuing problem of unauthorized charges appearing on people's phone bills. I think some of our witnesses will talk about that.

Businesses struggle. Some in the industry will struggle because of the changing environment where there is kind of an uneven playing field when it comes to the regulatory environment, and sometimes that is not real clear and it is hard to navigate that. And we appreciate that. We would like to hear some discussion of that as well today.

And also, one of the big changes that is going on right now is the transition from circuit-switched to Internet Protocol technologies, and this offers a great potential benefit to everyone. But it also challenges us to look with fresh eyes at the existing regulations we have and to maybe reexamine where we are.

But nonetheless, this bedrock principle that we have talked about before, that everyone should benefit from our national communications network—that still remains. And we do not want to leave parts of America behind, and I think for some of us, the things we focus on in rural America—we do not want to have the tale of two Americas here where you have the urban and suburban and they have the latest and the greatest and the most cutting-edge, and then rural America is really decades behind. And we need to make sure we do not do that.

Today's panel is made up by a group of very qualified individuals. I appreciate all the panelists for being here. They represent a broad spectrum, a broad cross section of the industry, including the incumbent, competitive, and rural carriers, as well as public interest representatives, and then industry analysts. So again, we appreciate your range of perspectives. We appreciate your valuable observations, and we all look forward to your testimony.

And with that, I will turn it over to Senator Wicker.

**STATEMENT OF HON. ROGER F. WICKER,
U.S. SENATOR FROM MISSISSIPPI**

Senator WICKER. Thank you, Chairman Pryor, and thank you for holding this hearing. It is the fourth of the hearings on the state of communications.

And let me say at the outset how comforting it is to have as a Chairman someone who knows how to properly pronounce the word "wireline."

[Laughter.]

Senator WICKER. For the Senator from Minnesota, it may take more effort to pronounce those diphthongs; but not for Roger Wicker and Mark Pryor, my neighbor from across the river.

The wireline sector is currently in a state of flux. Another way of saying it would be we are in a state of transition. Industry and consumers have been migrating away from traditional voice telephony, and in quick fashion. Consumers are frequently opting to cut the cord and move to mobile wireless and voice over IP services as their primary home phone lines. We are making an exciting conversion to a broadband world, a world that has seen rapidly growing innovation, competition, and options for the American consumer. These options will not only improve the day-to-day lives of our constituents but, most importantly, provide the tools that will stimulate a new broadband economy.

With this transition, there are a number of issues that we as policymakers must examine. Priorities conceived in an era dominated by copper line infrastructure are ripe for reconsideration and modernization in the IP era. The transformation of the Federal Universal Service Fund from a program dedicated to promoting traditional voice communication over the publicly switched telecommunications network to one focused on broadband delivery to all corners of our nation is of vital importance to rural states like the ones represented on this panel today.

We discussed many of these issues in our first subcommittee hearing this year, Mr. Chairman. It focused on the state of rural communications. At that hearing what became clear was that while the FCC successfully put the USF on a path to modernization, there were still a number of holes that needed to be filled to ensure that the program continues on a successful path. Providers should be encouraged, not discouraged, to build out and deploy broadband to our constituents.

Moving forward, we need to ensure that the USF operates in a technology-neutral fashion. That includes all providers committed to serving rural America. I look forward to hearing our witnesses' testimony on this topic.

Another transition that is receiving a growing amount of attention is the IP, or Internet Protocol, transition. As highlighted in the FCC's National Broadband Plan, the IP transition is expected to bring the full benefits of IP broadband networks to our constituents. This network modernization will not only provide far more efficient voice and data services than we have today, but also dramatically upgrade educational services, next generation 911, and health IT systems. We need to keep our eye on the ball. There is consumer demand for high speed broadband service applications now, and it is in their best interest that we make progress. Presupposing that regulation is needed on a platform that has flourished in the absence of regulation should not be our starting point. That being said, I recognize this is a complicated issue with many moving parts.

I see that we are now joined by Ranking Member Thune. He and I agree this is an important enough issue that we have directed our respective staffs to engage stakeholders and experts analyzing all aspects of the transition and that we need to determine whether

Congress may have a role in fostering the modernization of our nation's communications network infrastructure.

So thank you, Mr. Chairman, for holding this important and very timely hearing, and thank you to our witnesses, who I greeted before the hearing began. I look forward to hearing your views. Thank you, sir.

Senator PRYOR. Thank you.

And we have been joined by Senator Thune, the full committee's Ranking Member. Senator Thune?

**STATEMENT OF HON. JOHN THUNE,
U.S. SENATOR FROM SOUTH DAKOTA**

Senator THUNE. Well, thank you, Chairman Pryor and Senator Wicker. And I want to thank our witnesses for being with us this morning.

And I want to say, Mr. Chairman, to you and Senator Wicker that I commend you for continuing these "state of" hearings to inform our committee about our nation's communications infrastructure and about the services, the opportunities, and the challenges facing our constituents as we move deeper into the 21st century.

Rural communications are a priority of mine, and I am continually amazed at the capabilities that are being delivered in South Dakota. My home state is one of the national leaders in fiber build-out, thanks to companies like CenturyLink, Midcontinent Cable, and SDN Communications with its 17 member-owners. Of course, connectivity is not just about physical wires. The satellite services and new 4G mobile networks being deployed today offer even more economic and social opportunity for my fellow South Dakotans and consumers across the country.

Much of this deployment is the result of our commitment to universal service. As we move forward, we should not allow existing networks to wither or future services to go unoffered because of unpredictable or inadequate universal service support. The FCC is directed by law to provide predictable and sufficient mechanisms to preserve and advance universal service, and it needs to abide by that directive.

The state of wireline communications today is clearly one of transition. The older copper wire networks of the 20th century are being replaced by fiber optics. Circuit-switched telephony is migrating to packet-switched IP technology. American households are no longer faced with phone service from a government-protected monopoly. In fact, less than one-third of households today purchase voice service from their local telephone companies, and nearly 40 percent have cut the cord, forgoing wireline voice service altogether.

Furthermore, we do not just have competition among multiple wired and wireless networks today but also new alternatives to real-time voice communication, through texts, tweets, chats, and social media. These alternatives are IP-enabled and delivered over broadband, and they are largely unregulated. But as consumers demonstrate a preference for less-regulated, competitive alternatives to traditional local phone service, our laws continue to presume a monopoly exists for local voice communications.

As mentioned by Senator Wicker, we have tasked our staffs with engaging stakeholders and experts to both stay abreast of the ongoing IP transition and to look for ways where Congress may be helpful in the modernization of our nation's communications networks.

We should not approach the IP transition with anxiety and fear but with optimism and vigilance. Being distracted by what might be lost will be less useful than considering what has and will be gained. This transition brings forward many complex and deeply entrenched issues. We must, therefore, identify the challenges that an all-IP world presents and then determine how ingenuity and innovation and perhaps regulation will be able to overcome those challenges.

We should acknowledge the growing choices in today's market and pivot from the century-old default assumption that our nation's communications system is uncompetitive. In laying out a strategic plan for the FCC in 1999, former FCC Chairman William Kennard proclaimed—and I quote—“We must resist imposing legacy regulations on new technologies. Our goal should be to deregulate the old instead of regulating the new.” I could not have said it better myself.

Mr. Chairman, we should focus on empowering individual consumers, entrepreneurs, and innovators. We should target limited Federal support to, and encourage investment in, areas that remain underserved because of structural economic reasons. We should understand the promise of what an all-IP world holds for better public safety, better education, better health care, and a more vibrant civic society than we know today.

This may require removing obstacles which may include repealing or amending outdated laws, ending inefficient regulations, or even nudging reluctant incumbent business interests forward. American consumers are driving the broadband economy. We, as policymakers, should take their cue and ensure that they—not the government—manage the marketplace.

I look forward to a bright communications future for our nation and I appreciate our witnesses' thoughts today about how we can best pursue it.

Thank you, Mr. Chairman.

Senator PRYOR. Thank you. I know we are going to move to our panel in one moment. Would you like to say a word?

**STATEMENT OF HON. AMY KLOBUCHAR,
U.S. SENATOR FROM MINNESOTA**

Senator KLOBUCHAR. Oh, thank you, Senator Pryor. I will put my statement on the record.

[The prepared statement of Senator Klobuchar follows:]

PREPARED STATEMENT OF HON. AMY KLOBUCHAR, U.S. SENATOR FROM MINNESOTA

Thank you, Chairman Pryor for holding this hearing to talk about the state of our wireline communications.

While we continue to see a trend of more and more Americans going mobile and cutting the cord to their landline phones in favor of wireless options, it is important to note that the wireline networks provide the necessary and vital backbone for those mobile services. Additionally, businesses small and large continue to rely on wireline communications every day to connect with their customers around the world.

I continue to be encouraged by the innovations in the communications industry. But we do need to promote consistency and clarity in the regulations that govern the industry. In turn, companies need to also provide their customers with clarity and consistency—this means they need to protect consumers from cramming, provide accurate data about their services, and complete their calls to rural areas.

We need to make sure that wireline services are billed fairly and transparently for consumers, that connections are reliable, and that rural areas have the same quality of service as urban areas. Call completion issues have continued to be an issue in my state and in other rural areas which is why I have introduced a resolution with Senator Fischer urging the FCC to act expeditiously on call completion problems to rural America through both rulemaking and enforcement actions. I am pleased that the Committee will be considering this resolution on next week's markup.

Communications services are vital to the economic future of this country and to Minnesotans, and as the network continues to evolve we need to continue to make sure that consumers are protected.

Senator KLOBUCHAR. But I did want to say correctly "wireline."
[Laughter.]

Senator KLOBUCHAR. Senator Thune, Senator Fischer, you should know—especially Senator Fischer—that Senator Wicker was saying that only Southerners can pronounce that correctly. I would like to have reflected on the record that it has been found that Midwestern women's voices are the most neutral and soothing.

[Laughter.]

Senator KLOBUCHAR. And that is why they are often picked to be television anchors. And so that is the last thing I will say on this matter.

But we are looking forward——

Senator WICKER. And alluring.

[Laughter.]

Senator KLOBUCHAR. Yes.

Senator Fischer and I have a resolution on call completion that I understand is going to be on the agenda next week. And so I am interested in hearing from you on that as well.

Thank you.

Senator PRYOR. Thank you.

Senator Fischer, would you like to say a word?

**STATEMENT OF HON. DEB FISCHER,
U.S. SENATOR FROM NEBRASKA**

Senator FISCHER. Thank you, Mr. Chairman. I can only agree with my mentor here in the Senate, Senator Klobuchar. I look forward to the panel and having a chance to have a good conversation and back and forth with you on these issues.

Thank you so much and thank you, Mr. Chairman and Ranking Member Wicker, for having this hearing.

Senator PRYOR. Thank you.

Let me go ahead and introduce our entire panel. In order to save some time, I will just do a very brief introduction. They all come with very strong credentials. We will make their backgrounds part of the official record. And I would ask each one to do 5 minutes, and we will make your full written text a part of the record as well.

But, first, let me start with Jeff Gardner. He is Chairman of the Board of Directors of USTelecom and President and CEO of Windstream Corporation. Then we have Shirley Bloomfield, CEO of NTCA—The Rural Broadband Association. We have Jerry James,

CEO of COMPTTEL—The Competitive Communications Association; then Larry Downes, Internet industry analyst and author; and Gigi Sohn, President and Co-Founder of Public Knowledge. So, again, thank you all.

I recognize each of you for 5 minutes. Mr. Gardner, will you lead off? Thank you.

**STATEMENT OF JEFF GARDNER, PRESIDENT AND CHIEF
EXECUTIVE OFFICER, WINDSTREAM CORPORATION ON
BEHALF OF THE UNITED STATES TELECOM ASSOCIATION**

Mr. GARDNER. I am Jeff Gardner, President and CEO of Windstream, a major rural ILEC and also one of the nation's top competitive carriers. I am testifying in my capacity as Chairman of the Board at USTelecom.

I have three points about the state of wireline communications.

First, wireline is the vital infrastructure for all communications.

Second, rural networks are at a critical point, with significant uncertainty at the FCC and in the states.

Third, we must create a pro-consumer, pro-competition regulatory framework for the IP era.

Through all the changes in my 30-year career in the wireless and wireline industries, the wireline network remains the linchpin. Broadband, WiFi, LTE, 4G, Ethernet, and so on all rely on robust wired networks, and each day the demand for those networks grows. Last year, wireline networks handled 98 percent of total U.S. data traffic. USTelecom's members are investing billions each year to keep pace with the phenomenal growth in data consumption.

Wireline technology is essential to providing wireless services, whether it is connecting cell towers to the rest of the network or offloading wireless traffic onto WiFi at home, the coffee shop, or an airport.

Rural policy and networks are at a critical point. Universal Service reform and intercarrier comp cutbacks are generating serious financial pressure and uncertainty. USF reform has become shorthand for a top-to-bottom rewrite of rural programs, including Universal Service, as well as intercarrier compensation. The reductions in revenue are significant and austere. This impedes our ability to serve rural customers.

To recap FCC actions since 2011, intercarrier compensation has been slashed by billions of dollars while Universal Service remains level funded. Meanwhile, the FCC expects more from us, namely preserving full voice coverage while substantially expanding rural broadband.

Inter-carrier compensation cuts are well underway. Meanwhile, USF reforms that promise to bring added support to larger price cap carriers remain in development.

On phase one of the Connect America Fund, we are pleased by the FCC's recent decision to invest \$485 million in rural broadband. We thank you, Mr. Chairman, and others who were engaged in this.

Phase two, which is the long-term program, is still on the drawing board.

Uncertainty also exists for smaller rate-of-return carriers. There are concerns that the reform order's quantile regression analysis is not performing as intended. USTelecom believes the Commission should expeditiously examine and understand the real-world effects on rate-of-return companies.

Finally, it is time for a fresh look at the longstanding regulatory structure for legacy telephone companies. The biggest mismatch between regulatory approach and market realities is the retail residential market. ILEC's are in a dog fight for residential voice customers. Legacy regulations are unfairly inflating costs for providers and limiting flexibility for consumers.

USTelecom recently petitioned the FCC for regulatory forbearance, seeking the elimination of outdated rules and reporting requirements, some dating back to the telegraph era. In May, the FCC agreed to drop certain requirements, but many other unnecessary regulations remain.

A related issue is the ongoing shift to IP-based services. All companies are deploying IP in their networks. There is an important and timely dialogue underway at the FCC, but the IP transition is in process. For each provider, the transition will unfold in different ways at different times.

The association that I lead is comprised of companies offering a variety of services, utilizing copper, fiber, coax, and wireless platforms in widely diverse business environments. There is no one-size-fits-all approach when it comes to issues such as interconnection, competitive access, transport, privacy, and public safety. It is critical that reforms be judicious and grounded in facts. Where the competitive dynamics are not fully understood, we will need to gather data.

In closing, the state of wireline is robust and dynamic. USTelecom member companies are investing in the future, but will require your attention and oversight to foster a vibrant, competitive, and innovative communications market that serves the public interest.

Thank you.

[The prepared statement of Mr. Gardner follows:]

PREPARED STATEMENT OF JEFF GARDNER, PRESIDENT AND CHIEF EXECUTIVE OFFICER, WINDSTREAM CORPORATION ON BEHALF OF THE UNITED STATES TELECOM ASSOCIATION

Chairman Pryor, Ranking Member Wicker, members of the Subcommittee: Thank you for the invitation to testify today on the state of wired communications.

I am Jeff Gardner, President and CEO of Windstream, a FORTUNE 500 telecom provider with an innovative hybrid business model. Windstream is a major rural ILEC and one of the Nation's top competitive carriers as well. My testimony today is in my capacity as Chairman of the Board of Directors of the United States Telecom Association (USTelecom).

USTelecom is the Nation's oldest and largest association for owners of wired communications infrastructure—first, telephone companies and, today, broadband providers. The association represents some of the largest companies in the U.S., as well as some of the smallest cooperatives and family-owned telecom providers in rural America. We use a variety of technologies and platforms to provide voice, video, and data to residential customers, small businesses, large corporations, and governments at all levels.

This is a dynamic time for wired communications. Technology and business models are transforming rapidly. I would like to make three points, in particular, about where this industry stands and what lies ahead:

- (1) Wireline technologies comprise the most robust, secure, and relied upon communications infrastructure in the Nation. Our members provide service to wireline end-user customers of all sizes, and also supply the veins and arteries of wireless communications;
- (2) The FCC is in the process of dramatically reshaping the financial underpinnings of universal rural networks and while this transition must succeed, many details remain unresolved;
- (3) Communications technology is advancing at a rapid pace. This puts pressure on the regulatory structure to keep up. It is essential that we work together to update rules to a pro-consumer, pro-competition framework for the information age.

The wireline network is the linchpin of the information age

I started my career in 1986 in the wireless industry and have extensive experience in both wireless and wireline. I have witnessed dramatic changes in wired telecommunications. Wires are less visible to the consumer than they were 30 years ago, but in many ways they are even more important. As a recent filing by the Department of Defense noted, the wireline industry provides vital communications links for military installations, the Nation's air traffic control system, and storefront offices of the Social Security Administration.

Broadband, Wi-Fi, LTE, 4G, Ethernet, and so on all rely on robust wired networks, and each day the demand for those networks grows. Last year, wireline networks handled nearly 99 percent of U.S. video traffic and 98.4 percent of total U.S. data traffic. The share of traffic handled on mobile networks is increasing rapidly, but will only represent about 5 percent of overall traffic in five years.

USTelecom's members are leading the way and investing billions each year to advance this technological revolution. The wireline telecom sector has invested \$645 billion over the past decade to transform our industry from one focused primarily on voice services to one leading the way on data services. Every year is a race to keep pace with astounding trends in data consumption—over the past 15 years, total data traffic has grown at a compound annual rate of 81 percent.

We also are essential partners in the wireless revolution, connecting cell towers to the rest of the network—most often with robust fiber optic cable—as well as offering Internet backbone and middle mile connections. In addition, for all wireless networks and technologies, one of the most important traffic management tools is off-loading traffic onto landline networks as quickly as possible. Often, this means handing off traffic to Wi-Fi networks supported by wireline providers. One recent analysis found that Wi-Fi already handles more than two-thirds of the data for LTE subscribers and that its share is expanding. When consumers use tablets and smart phones at home, at a hotel, or in a shop, chances are they are connecting through a wired Wi-Fi connection.

Some reporters and analysts have speculated about the extinction of wireline companies. But as Mark Twain might have said, “rumors of our death have been greatly exaggerated.” In fact, for Windstream, our wireline operations are growing, not contracting. Our employee count in Arkansas has grown 17 percent since 2010, and the company entered the FORTUNE 500 list for the first time this year. As a whole, the wireline industry has been investing on a massive scale to keep pace with changes in technology and consumer demand. For several years in a row, even through the toughest recessionary times in generations, our industry has invested more than \$65 billion annually in broadband and other communications infrastructure. Wireline remains a major employer of high-skill workers. Excluding cable, the wireline industry employs about 400,000 American workers and pays wages approximately 45 percent above the national average.

Future investment in rural broadband networks is at critical point

In rural America, as in the rest of the country, wired networks remain essential to all communications—arguably more essential than ever. When you're speeding along a rural interstate, it takes more than air and a smartphone to make a call or send an e-mail. Your device links to a tower or antenna that is tied immediately into a wired network—maybe the same overhead cable strung down the side of your highway. And, of course, many rural consumers live far from the Interstate highways, in places where wireless service is not so prevalent or reliable. The wired network—increasingly via broadband—remains the tether for the Nation's rural citizens to family, friends, and business interests around the state, country and world.

In short, wired networks remain essential infrastructure for ensuring that communication services for rural consumers are comparable to those in urban areas in quality and affordability—words that are not mere slogans but rather statutory

touchstones and directives to the FCC. Thus, you can appreciate the stakes around universal service and intercarrier compensation reform.

The inherent and long-standing challenge in rural America has been to deploy, operate, and maintain expensive assets in areas with low population density. As a general principle, network costs are lower per subscriber in more densely populated areas but higher in rural areas, while total revenue potential decreases with lower density. That's why we have universal service programs and intercarrier compensation systems.

"USF/ICC reform" has become shorthand for a top-to-bottom overhaul of rural communications programs, starting with the Universal Service Fund itself, and also including the Federal and state components of intercarrier compensation, as well as state USF programs. The FCC's reform order in 2011 mandated specific and sizable reductions in intercarrier compensation and proposed a fundamental overhaul of universal service for high-cost areas. Nobody has attempted to score these changes in terms of their overall dollar impact, but at a high-level the math is simple and challenging. On one side of the ledger, intercarrier compensation has been slashed by billions of dollars, while Federal universal service funding remains at roughly the same level as before. On the other side of the ledger, the FCC's goals now are to sustain ubiquitous voice service while also, simultaneously, substantially increasing broadband access in rural America.

We understand the need for reform and helped get the comprehensive reform order across the finish line in 2011, but the job is far from complete. We were pleased by the FCC's decision in May to invest \$485 million in rural broadband expansion via phase 1 of the Connect America Fund. Mr. Chairman, you and several others on the Committee played important roles in that decision, and we thank you. Still, unresolved aspects of reform, coupled with slashing of intercarrier compensation, have created troublesome uncertainty for "price cap" carriers and the consumers they serve. For the future, there are plans to estimate the price cap carriers' costs of providing service to certain rural areas, then offer funding above a high cost threshold, along with a set of performance requirements, to serve the area. There has been an unspoken assumption that the proffered funding will be reasonable to the provider, but also attractive to policymakers who are trying to cover the Nation with ubiquitous voice and broadband on a constrained budget. We are hopeful that these dual objectives soon will be fulfilled, and that the strain from existing uncertainty will be lessened. But we need the FCC to continue in a transparent and deliberate fashion as it moves forward with the next phase of reform, and ask the Committee to keep a watchful eye in its oversight role.

Likewise, the reforms for smaller "rate-of-return" companies have created uncertainty for those providers.

One way to understand the situation for rate-of-return companies and cooperatives is to look at the broadband loan programs run by the Rural Utilities Service at the Department of Agriculture. Borrowing from RUS has dropped to 37 percent of the money appropriated by Congress in the last Fiscal Year. Meanwhile, private lenders have withdrawn from the market altogether. Rob West of CoBank, a major lender to small carriers, estimates that "many small rural wireline providers have [lost] or will lose 50 to 100 percent of their capacity to access borrowed capital." The bottom line is reduced capital investment for broadband service in rate-of-return areas at the very time policymakers—from the President to members of the Senate and House to key Federal agency appointees to state commissioners—are calling for bringing broadband to unserved communities.

There are concerns that the reform order's "Quantile Regression Analysis" (QRA) approach to determining universal service support to rural rate-of-return companies is not performing as intended. To better assess the impact of the QRA on rate-of-return companies, USTelecom believes the Commission should expeditiously examine and understand the real world effects of USF reform on rate-of-return companies and determine how to ensure that, in operation, it meets the Communications Act's requirement that rural Americans have communications services comparable in quality and affordability to those in urban areas.

A pro-consumer, pro-competitive framework for the information age

Finally, let us consider the state of regulation for wireline communications. The regulatory structure for legacy telephone companies is the oldest, most comprehensive, and least flexible in all of communications.

The biggest mismatch between regulatory approach and current market realities is in the retail residential market. Recent data from the FCC, as well as from the Centers for Disease Control, indicate that by year's end, about 25 percent of U.S. households will have traditional voice service from incumbent local exchange car-

riers (ILECs). ILECs are no longer the dominant providers of retail residential voice service, and Federal and state regulators must respond accordingly.

In fact, ILECs are in a dogfight for residential voice customers, and legacy regulations are unfairly inflating costs and limiting flexibility for consumers. Google recently announced that in Kansas City, where it has deployed a new fiber-to-the-home network, it will not offer voice service because of the regulatory burden. These regulations are holding back competition in the entire residential voice market.

USTelecom has attempted to address these concerns in several ways. Recently, USTelecom petitioned the FCC for regulatory forbearance. The association sought the elimination of 17 categories of rules and reporting requirements that no longer have relevance in today's marketplace. Some of these rules dated back to the telegraph era, and others are rooted in presumptions that ILECs remain monopoly providers of residential voice service. For instance, Windstream was required to offer long distance through a separate corporate entity from our local exchange services. This and other requirements were dropped in the FCC's decision, released in May. But many other archaic and unnecessary regulations remain on the books, imposing costly burdens on our member companies and forcing us to fight with one hand tied behind our backs to retain old customers or to gain new ones in the face of obvious market evidence demonstrating that competition in the residential voice market is thriving.

Closely related is the question of how the ongoing shift to IP-based services should affect regulation. All companies are deploying IP in their networks and appreciate the importance of this conversation, which is enhanced by the creation of an FCC task force on the issue. But this transition is a process, and will unfold in different ways and at different times for each provider.

As I noted at the beginning of my testimony, technological changes and the demands of consumers and businesses for new solutions to their communications needs have brought real pressure to bear on our regulatory structures. This is a challenge for regulators, but also for us, as an industry. Increasingly, there is no "one size fits all" approach. My company serves both urban and rural markets, it serves both residential consumers and business customers. In some areas it operates as an ILEC, in some as a CLEC—indeed, as one of the Nation's largest and most successful CLECs. Likewise, the association that I lead is comprised of companies offering a variety of services—utilizing copper, fiber, coaxial and wireless platforms—in widely diverse business environments. So, when it comes to issues such as interconnection, competitive access, transport, privacy, and public safety, we are keenly aware of the need for public policy to balance regulatory treatment among competing platforms, to avoid disincenting wireline investment, and, at the same time, avoid competitive harm, especially during this transition period that we are in, a transition that is technology-driven. Therefore, the goal of our association, and my goal as Chairman, is one that I would hope is shared by this Committee: It is to forge a consensus on how we can restructure regulatory approaches in a way that provides consumers and businesses with all the benefits of the Information Age. In areas where the competitive or economic dynamics are not fully understood or where there are gaps in our knowledge, we will need to gather and analyze the right data to understand the specifics of the situation. Modernizing our regulatory structure and planning for a smooth transition to an IP world are essential to the health of the wireline industry and all the benefits that it brings our nation, and it is critical that reforms be judicious and grounded in fact-based assessment of the modern communications marketplace.

In closing, my view is that the state of wireline is robust and dynamic. After decades of change, the wireline infrastructure remains the durable and essential core for all communications. Cloud computing promises real benefits for businesses and consumers, but only if a robust wireline industry can supply the broadband connections on which cloud computing depends. Similarly, advanced healthcare applications, gigabit connections linking research universities and gigabit communities all will depend on robust wireline infrastructure. If we are to reach the goals established by President Obama in his ConnectEd initiative to connect our Nation's schools to the Internet at gigabit speeds and the FCC's goals for a reformed E-Rate program, our country absolutely needs a healthy and robust wireline industry continuing to invest billions in broadband infrastructure.

USTelecom member companies believe the future is bright and are investing accordingly, but we will require your attention and oversight to protect the public interest in strong communication links for all Americans, including in rural areas, and to foster a vibrant and innovative market for communications services.

Senator PRYOR. Thank you.
Ms. Bloomfield?

**STATEMENT OF SHIRLEY BLOOMFIELD, CHIEF EXECUTIVE
OFFICER, NTCA—THE RURAL BROADBAND ASSOCIATION**

Ms. BLOOMFIELD. Mr. Chairman and Senators, thank you from this Midwestern woman for the opportunity to participate in today's hearing.

[Laughter.]

Ms. BLOOMFIELD. NTCA—The Rural Broadband Association represents nearly 900 small rural telecommunications providers everywhere from the North Slope of Alaska to the Everglades in Florida. Our members hold a very deep commitment to the communities that they serve because they live there, and these small businesses create jobs, they fuel the economy, they connect the world to rural America, and frankly, they also connect the wireless devices that we all use. But these companies need sufficient Universal Service support and regulatory certainty to be able to operate in these hard-to-serve areas.

When we talk about Universal Service, we are really talking about the foundation of a universal economy and a better connected Nation. Federal law and cost recovery mechanisms, such as USF and intercarrier compensation, have long ensured that all Americans can participate in our increasingly interconnected world, leaving no one behind.

Of course, these programs do need to be reviewed and to ensure that they remain applicable and sustainable. But, unfortunately, rather than building upon what has actually worked, the USF and ICC reforms have generated paralyzing regulatory uncertainty and a lost year broadband deployment to the detriment of rural consumers and the small businesses that they serve.

For several years, we have made every attempt to work with the FCC to create a sustainable and predictable path forward. We proposed a number of very common sense solutions and industry agreements to responsibly transition these cost recovery mechanisms from voice to a broadband world. My written testimony outlines some of these thoughts, but I want to hit some of the highlights here with you all today.

First, we need transparency. We need accuracy and predictability in the USF system. The FCC has adopted a new statistical model which is called "the quantile regression analysis." It compiles 2-year-old data from hundreds of Universal Service recipients and then runs the data through a very complex formula to arrive at an annual cap on each carrier's USF support, and that cap is recalibrated every year. The approach is inconsistent with the law that mandates that USF be predictable. As such, the QRA should be eliminated or perhaps used only as a trigger to flag a given carrier for additional review. At the very least, the cap should be phased in over a longer period of time until the QRA issues are resolved.

Second, the FCC should follow through on some earlier promises to create a clear and simple waiver process. The FCC touted the waiver process as a safety valve for situations where the reforms were having the effect of undermining Universal Service rather

than promoting it. But it has been anything but simple, affordable, or successful to date.

Third, the FCC should not proceed with additional cuts, caps, or constraints on USF and intercarrier cost recovery until it has fully evaluated the impact of what has already taken place. NTCA really appreciates the recent call that the Senate has made for a GAO report that will allow us to study the impacts of these reforms, and we believe that having the FCC wait to find out what comes out from those findings would be very critical.

Fourth but not last, the FCC must adopt a sufficient and predictable Connect America Fund for small carriers to fulfill its policy objectives. The irony to date is the FCC has not created a Connect America Fund for rural carriers and has only actually cut legacy USF and intercarrier comp programs, which has led to higher rates for service and less investment.

We talk a lot about the IP transition, and rural network operators have really been at the forefront of this evolution, never losing sight of some really core principles that I think Congress really cares about as well, and those are principles that compel consumer protection, the promotion of competition, public safety, and Universal Service.

NTCA filed an IP evolution petition that highlights that as we migrate through this area, which is going to be very complicated, consumers and businesses will only benefit if the core objectives remain our collective guideposts. We believe the best way forward is to work from a well known regulatory framework and then surgically identify what rules need to be retained, what needs to be improved, what can be enhanced, modified, or eliminated that is consistent with those objectives.

And there is probably no more pertinent example of the need for clear rules of the road than the call completion epidemic. Rural consumers are losing faith in the reliability of critical communication networks and the ability of policymakers to help manage them. This widespread problem of calls simply not terminating into rural markets is harming consumers, public safety, and the viability of businesses that are located in rural America. Rural consumers beyond frustrated and we are greatly appreciative of the help that the Senate has shown so far.

Unfortunately, there has been very little regulatory or economic consequence for such failures to date. Congress has produced letters. You have supported a resolution, report language, and the FCC has taken some steps to investigate this. But we are begging for a more punitive message that this conduct is unlawful and that those responsible for the problem will be held accountable.

So in conclusion, NTCA members want to continue to build upon the success story of rural broadband in their difficult-to-serve markets. Also access to affordable content and the ability to compete for spectrum in the wireless space are also critical issues.

We are looking forward to continuing our work with Congress and the FCC to get it right. Our Nation's economic success, our access to natural resources, energy, and food production all depend on our getting it right.

Thank you very much.

[The prepared statement of Ms. Bloomfield follows:]

PREPARED STATEMENT OF SHIRLEY BLOOMFIELD, CHIEF EXECUTIVE OFFICER,
NTCA—THE RURAL BROADBAND ASSOCIATION

Chairman Pryor, Ranking Member Wicker, thank you for the invitation to testify at the “State of Wireline” hearing. I am Chief Executive Officer of NTCA—The Rural Broadband Association which represents nearly 900 small, rural telecommunications providers across the country from the North Slope of Alaska to the Everglades National Park in Florida. These companies serve areas long ago left behind by larger providers because the markets were too high-cost—too sparsely populated, too far from larger towns and cities, and/or just too challenging in terms of topography or terrain. As community-based operators, our members hold a deep commitment to their consumers. These small businesses create jobs, fuel the economy, and connect rural Americans to the world. I was last before this committee days before the Federal Communications Commission (FCC) released its Universal Service Transformation order. I am grateful for the opportunity to address where the reforms have led, for better and for worse. I will review where rural carriers stand after Universal Service Fund (USF) and intercarrier compensation (ICC) reform, discuss the challenges and opportunities presented by technological evolution, and address lingering concerns regarding access to content and meaningful wireless competition.

Universal Service Reform

As our Nation has understood for more than a century, and as Congress recognized by law in 1996, when we speak of universal service, we are really talking about the foundation of a universal economy and a better connected nation. The USF program helps to ensure that all American citizens and businesses, regardless of who they are or where they live, have a reasonable opportunity to participate in our increasingly interconnected and online world. The Hudson Institute, for example, has found that investment in rural telecommunications delivers real payback for our entire nation, generating \$14.5 billion annually in economic activity—\$9.6 billion of which accrued to the benefit of *urban* areas where equipment manufacturers, contractors, and other service providers reside.¹ As the foundation of telecom investment and operations in many hard-to-serve, high-cost areas, and the solution that promotes affordable rates to facilitate adoption by rural consumers, the USF program has therefore been a terrific success story for both those rural areas and for our nation as a whole.

Now, all stakeholders agreed that the USF program needed modernization and common sense measures to adapt to a broadband world and to make it more sustainable over time. Unfortunately, rather than building upon what had worked to update the USF program for a broadband age, the reforms put into place by the FCC in 2011 have caused a significant amount of regulatory uncertainty, have frustrated access to capital for network deployment, and have resulted in what might be called at least one “lost year” in broadband deployment by small rural carriers with the threat of more to follow. Indeed, several surveys and other data points confirm that broadband investment by small rural carriers has all but ground to a halt in the wake of the 2011 reforms. For example, a recent survey conducted by NTCA—The Rural Broadband Association² underscores just how real the impacts have been. Out of 185 small carrier respondents, 127 indicated they have either postponed or cancelled plans to upgrade their network infrastructure due to lingering regulatory uncertainty. One-hundred and one of these respondents indicated that the combined value of the projects put on hold equaled more than \$492 million.

A publicly filed summary of a meeting between U.S. Department of Agriculture (USDA) Secretary Thomas Vilsack and then-FCC Chairman Julius Genachowski further highlights how the 2011 USF changes have chilled network investment.³ Even as that filing explained how the economic stability of rural areas depends on the availability of resilient robust communications infrastructure financed in significant part by USDA programs, the letter also reported that, in Fiscal Year 2012, carriers were able to draw down only 37 percent of the telecom infrastructure financing made available by USDA. USDA expressly noted that current and prospective borrowers of the program cited uncertainty arising out of the FCC’s changes in declining to move forward with planned construction efforts, and the threat of more changes to come only exacerbates such concerns. CoBank, one of the few other lend-

¹The Hudson Institute study is available through the following link: <http://www.hudson.org/files/publications/RuralTelecomOct2011.pdf>.

²This survey can be found through the following link: <http://www.ntca.org/2013-press-releases/survey-shows-rural-telecommunications-carriers-postponing-delaying-network-upgrades-because-of-regulatory-uncertainty.html>.

³See Ex Parte letter filed on 2/15/13 by Acting Administrator Padalino which can be accessed here: <http://apps.fcc.gov/ecfs/document/view?id=7022122079>

ers to small rural carriers for network deployment capital, has also apparently severely cut back its lending in this space,⁴ and the bank recently made a filing at the FCC explaining how regulatory uncertainty surrounding the USF program was challenging its ability to advance capital in support of rural telecom investment.⁵

It is not as if demand by carriers and consumers is not there—to the contrary, it is quite clear that consumers across the country are seeking increased levels of broadband, and as always, rural telcos are willing and eager to serve them. Moreover, our companies *only* serve these rural markets, meaning that it is not as if they would rather divert resources to invest and provide cutting-edge services only in larger addressable markets. Similarly, it is not as if lenders are disinterested in the space—to the contrary, USDA and firms like CoBank and the Rural Telephone Finance Cooperative have long stood ready to help with the deployment of advanced communications networks in rural areas. Rather, the concerns that have reduced loan demand and availability arise specifically out of whether regulatory changes now being implemented—and the threat of further changes perhaps still to come—will preclude the payback of loans taken out to advance deployment of broadband-capable networks to the benefit of consumers and businesses in rural areas.

In the face of this presumably unintended uncertainty, NTCA has made every effort to work with the FCC and our member companies to create a more sustainable and predictable path for USF reform. We have devoted hundreds of hours to meetings with the FCC, other policymakers, and stakeholders aimed at identifying a better path forward that creates regulatory certainty and builds a broadband future for rural consumers even while working within broader reform objectives. We have proposed a number of commonsense solutions to facilitate the transition from a legacy USF regime to a true and effective “Connect America Fund” for all rural areas, while sustaining important accountability measures and recognizing the need to promote the fiscal sustainability of the program. Specifically, NTCA has suggested time and again over the last eighteen months four essential, straightforward steps that can and must be taken to overcome the current regulatory uncertainty and to develop a sufficient, predictable, and sustainable USF program for a broadband era. We have made some progress on some of these steps, but we also have a good, long way to go—and we remain hopeful that the FCC, or Congress to the extent necessary, will help in achieving these four essential objectives.

First, there is a need for greater transparency, accuracy, and predictability in the USF system, post-reform. As one example of several retroactive cuts on support, the FCC’s new “Quantile Regression Analysis” (or “QRA”) model to cap USF support for small carriers has created rampant uncertainty in the rural telecom marketplace. For those unfamiliar with the QRA model and its caps, I would urge you to take a look at how this incredibly complex system operates. If you thought the old ICC system with access charges was complicated, the QRA effectively requires a degree in statistics to understand.

In short, the QRA model takes data from the investments and operations of hundreds of small carriers in the United States from two years in the past and then, on the basis of over a dozen different variables, runs through a formula that creates caps to govern each carrier’s USF support for a given year. This system is then rerun each year and new caps are generated, always based upon what hundreds of other carriers did years before. NTCA and others have filed hundreds of pages over the past eighteen months showing how the model’s complexity and its opaque nature are creating regulatory uncertainty. NTCA and others have also made many filings showing that errors in the models run the real risk of creating misplaced or unjustified caps, and it has been clear at least in early 2012 that the service area maps included in the QRA model are not accurate. Despite these obvious flaws, this model is still being used to generate caps every year to limit USF support, and no carrier can know whether its investments or operations today might trip the caps two years from now. This is an unsustainable approach to universal service and it runs directly contrary to the congressional mandate that USF be predictable; the errors in capturing actual costs used and useful in providing universal service also mean the QRA model does not satisfy the congressional mandate that USF be sufficient.

NTCA and many other stakeholders therefore believe the QRA-based caps should be eliminated altogether and replaced with other mechanisms that would provide more clear and transparent limits on support. We proposed such a mechanism in 2011, and we continue to believe that proposal would provide greater visibility into

⁴See “State USF White Paper: New Rural Investment Challenges” by Michael J. Balhoff and Bradley P. Williams, June 2013, accessed here: <http://www.balhoffroutewe.com/pdf/BW%20State%20USF%20White%20Paper%20June%202013.pdf>.

⁵See Comments of CoBank filed June 21, 2013, WC Docket No. 10–90, pages 4–5.

how any limits would apply to prospective investments. Yet at the same time, since the QRA-based caps are already in effect, we have worked in good faith with the FCC to at least try to improve them. The FCC took some welcome interim steps last year to cushion the impact of the caps for 2013, and it also directed the commission staff to take further steps to improve the caps predictability. But we are now mid-way through 2013, and we have no better idea than we did on January 1 of this year what will be done to actually make that happen. If the model and resulting caps will not be eliminated or cannot be substantially improved very soon, the caps should then be used only as a “trigger” that flags a given carrier for additional review, rather than serving as an automatic disqualifier of recovery of certain costs. Alternatively, if they will continue to apply as true caps, their impacts should at least be phased-in over a longer period of time as the problems in the system are further analyzed and hopefully resolved. But in the absence of either immediate steps to address the uncertainty caused by the ever-shifting QRA caps or some other relief, we run the risk of 2014 becoming yet another “lost year” of rural broadband investment.

Second, the FCC should follow through with the promises made in its Fifth Order of Reconsideration to create a clear, simple process for carriers who need waivers from the FCC reforms. The FCC has touted the waiver process as an important safety valve where the reforms are having the effect of undermining, rather than promoting, universal service. The Fifth Order on Reconsideration attempted to tie the standards for a waiver more faithfully back to the universal service provisions in the statute, and we were hopeful in the wake of that decision that better progress might be made on this safety valve mechanism. Unfortunately, we continue to see waivers take incredibly long periods of time to address, cost carriers large amounts of money to seek, and, to date, we have seen little, if any, improvement in the process. If the waiver process is to be cited as the last line of defense for universal service, it needs improvement.

Third, consistent with its commitment to a “data-driven” approach, the FCC should not proceed with additional cuts, caps, or constraints on USF support and ICC cost recovery until it has evaluated the impact of changes already adopted and just now being implemented on consumers and core statutory objectives. A number of the reforms contemplate rate increases on rural consumers and are having the presumably unintended effect of slowing down broadband investment as already noted. Before undertaking additional changes that may only exacerbate these concerns and perpetuate regulatory uncertainty, good policymaking would dictate taking stock of the effects of the existing reforms on broadband deployment, broadband adoption, and end-user rates through a data-driven analysis. For example, we appreciate the interest of many Members of Congress in asking the Government Accountability Office to assess such effects starting later this year, and reviewing such data over the course of several years as the reforms already adopted continue to be implemented will be essential in determining what to do next—and, just as importantly, in determining whether any “course corrections” are needed for reforms already adopted.

Fourth, but hardly last in importance, the FCC needs to define a path forward for a sustainable broadband future for consumers in areas served by smaller carriers. The FCC created a Connect America Fund for larger carriers that will support broadband-capable networks, but, as discussed earlier, it has not yet taken such steps for consumers in areas served by smaller companies. Instead, it left in place legacy USF programs for smaller carriers with changes that reflect, on the whole, reductions in USF and ICC revenues. And the irony is that this legacy system, while it has worked well and should form the foundation of informed next steps, *still* needs updating to serve the objective of universal service in a broadband-enabled world. Today, if the customer of a small rural carrier wants to stop buying plain old telephone service and just wants broadband service alone, that customer’s broadband rates would increase because the legacy rules eliminate USF support on such a line. It is essential that the FCC update its USF mechanisms to avoid this result—it can and should create a targeted and tailored Connect America Fund for areas served by smaller rural carriers by providing sufficient support for the networks (both last-mile and transport) that enable the availability of advanced services of all kind in rural markets, regardless of whether each customer chooses to buy just plain old telephone service on those networks. This does not require massive changes or substantial reworking of the existing mechanisms along the lines of the Connect America Fund that is still in its second year of development for larger carriers. Instead, such a program can build upon the existing mechanism, with technical fixes to the existing rules helping to achieve the FCC’s modernization objectives and serve the interests of rural consumers and businesses.

IP Technology Evolution

There has been a great deal of talk in telecom circles recently about the “IP transition.” It is true that an evolution of network technologies is important both to provide increasingly attractive services to consumers and to enable carriers to achieve greater functionality and efficiency in their networks. But this is not some “switch to be flipped,” or “flash-cut” in moving from one type of network to another. To the contrary, while this evolution promises exciting things for our nation, it is not all that different *in concept* from when party-line services in rural areas were eliminated or when analog switches were replaced by digital switches. In fact, the IP evolution is already upon us—it is occurring today as communications networks and consumer demands adapt to new technologies and services.

Rural network operators have been at forefront of this evolution for years. Small rural carriers are no longer interested in just being telephone companies. They have been and remain innovators who have been making every effort to deploy advanced networks that respond to consumers and businesses for cutting-edge services. A recent NTCA survey found that our entire membership now delivers broadband.⁶ Another study a few years ago by the National Exchange Carrier Association (NECA) indicated that smaller rural carriers were already delivering at least basic levels of broadband to 92 percent of their customers as of 2010, and more than half of them had already deployed or had plans to deploy next-generation, IP-enabled switching and routing technology in place of legacy telephone switches within the next year.⁷

NTCA and its members have been considering for some time how best to promote and sustain this evolution to next-generation network technologies. Above all else, we believe that core statutory principles relating to protection of consumers, promotion of competition, and assurance of universal service apply by law to all communications, regardless of the technology used within underlying networks. As we migrate to newer network technologies and the services they enable, this backdrop must not be lost. Instead, consumers and businesses will only benefit if these principles in the statute remain our collective guidepost.

To help facilitate such a dialogue in policy circles and to shine a light on the need for thoughtful consideration of these principles in connection with the IP evolution, NTCA filed a petition at the FCC in late 2012. In that petition, we suggested that policymakers can best serve these important public policy objectives if they do not prejudice the value or inapplicability of specific rules or a broader regulatory framework. Specifically, NTCA contended that policymakers should not dismantle the current regulatory framework simply because underlying network technologies shift, while at the same time urging the FCC to also avoid leaving existing rules in place merely because they once made sense in an era when consumer preferences, technologies, and competition were different. We therefore urged the FCC to help promote and sustain the ongoing IP evolution by looking at existing rules to see whether each rule still has value in serving the statutory goals of consumer protection, promotion of competition, and universal service. Finally, we noted that by starting from a well-known regulatory framework and then looking to improve, enhance, modify, or eliminate parts of it based upon a surgical review, this would give greater certainty to consumers, investors, lenders, and the industry than either a regulatory vacuum or maintaining the status quo.

NTCA's petition also focused on a number of incentive-based measures which would help accelerate the technology transition. The first measure is one I have already mentioned—cleaning up legacy rules that compel consumers of small rural carriers to take “plain old telephone service” in order to obtain affordable broadband services in rural areas. The FCC resolved this issue for larger carriers serving rural areas in deciding to set up a Connect America Fund for them, and it has finally started moving forward on this issue for smaller carriers by seeking comments on a concept proposed by NTCA and other rural associations. In fact, the record before the FCC shows overwhelming support for our proposal. It is therefore our hope that the FCC will move to make the technical rule fixes needed to address this issue in the near future.

Another measure identified in the NTCA IP Evolution petition was the establishment of a sufficient “middle-mile” USF support for rural carriers. Here again, the FCC is in the process of resolving this issue for larger carriers as part of their “Connect America Fund,” but there is no Connect America Fund program yet for smaller companies serving exclusively rural areas. One of the most costly parts of providing broadband service to rural consumers is the so-called middle mile network required

⁶This survey can be found through the following link: <http://www.ntca.org/images/stories/Documents/Advocacy/SurveyReports/2012ntcabroadbandsurveyreport.pdf>.

⁷This survey can be found through the following link: https://www.neca.org/cms400min/NECA_Templates/PublicInterior.aspx?id=100.

to connect rural consumers to the Internet on-ramps located in distant cities. The only way to ensure broadband service will be robust and affordable for rural consumers and businesses over time is to make sure sufficient middle mile support will be available for high-cost rural areas.

Finally, the NTCA IP Evolution petition noted that the FCC has yet to address how carriers can interconnect with one another in an IP-enabled world. Even if IP networks are more efficient, there are still real and substantial network costs associated with the underlying transport of data from point A to point Z. It is not as if all of that data floats on free “pixie dust”—there are real networks with real construction and operating costs that must be designed to handle the increasing amounts of traffic we all see on our networks, regardless of whether that data is IP or otherwise. Clear “rules of the road” for interconnection in an IP-enabled world will be essential to ensuring that certain consumers and businesses are not left behind, and to ensure the seamless transmittal of data in accordance with customer expectations.

Call Completion

There is perhaps no more pertinent example of why clear “rules of the road” are important than the call completion epidemic that continues to plague rural areas. After more than two years since this issue was first brought to the attention of regulators, rural consumers and the carriers that serve them are losing faith in the reliability of critical communications networks and the ability of regulators to help manage them. Increasingly over the past few years, calls do not get through to rural areas—or when they do, they often have quality problems. This widespread problem is seriously and negatively affecting not only consumers, but also public safety and the viability of businesses located in rural areas.

The problem often appears to stem from choices made by originating long distance carriers to use the cheapest possible route to transmit calls to rural areas—with the apparent sense that, if the calls should happen not to get there because a contractor in the middle (often called a “least-cost router” in the telecom industry) fails to deliver the call, there is little regulatory or economic consequence (if any) for such failures. The solution to this problem would require the originating long distance carriers to better police their service quality and the contractors they use. Greater transparency into the least-cost routing market would also help, but unfortunately scant information is available regarding who provides such services and when and where they do so.

This is not to say that the FCC has done nothing to address this—we just need the agency to do more in terms of enforcement, and do so quickly. Congress has sent a number of letters to the FCC already urging quick action. The FCC released a Declaratory Ruling in February 2012 putting originating long distance carriers on notice that they are liable for call failures, even where the cause of the call failure is an underlying contractor or least-cost router in the middle. Then just last week the FCC reiterated this directive in a sternly worded “Enforcement Advisory” giving startling examples of how cavalierly some carriers and least-cost routers have taken enforcement efforts to date. The FCC also released a Notice of Proposed Rulemaking earlier this year which would force carriers to retain information so that the scope of the problem could be ascertained on a company-by-company basis and enforcement action could be pursued. While having access to such data would be an important step forward, complaints of calls failing to reach rural America continue, and we are begging the FCC to do more now to send a message that such conduct is unlawful.

The FCC did take action earlier this year, announcing a “Consent Decree” with Level 3 Communications, in which the carrier paid a “voluntary contribution,” to monitor its call completion performance, and to pay additional amounts if its performance failed to satisfy certain metrics. But more enforcement is needed, as a one-time enforcement action two years after the problem was first brought to light and when unknown numbers of calls are still failing on unknown number of networks across America won’t do the job. As one state regulator put it, it is time for the FCC to “drop the hammer”—in fact, it’s more than time to do just that.

Video Issues

Small carriers have been providing video service to their consumers for many years. In limited areas this may be done in direct competition with large cable companies, enhancing consumer choice. In more remote places where over-the-air signals may be weak and unreliable and/or the small carrier is the only local provider available, this is a critical service to customers who need access to local news and weather reports.

Video provision is also a broadband issue, as small carriers frequently use the same infrastructure to deliver both video and broadband services. In fact, the FCC has found that these services are intrinsically linked.⁸ When small carriers are able to offer video and broadband services together, data shows that broadband adoption goes up 24 percent,⁹ which makes it more feasible to invest in broadband networks. However, small carriers' ability to deliver video and broadband services are impeded by outdated program access rules that make the business case increasingly difficult even for the Nation's largest cable companies.

Retransmission consent rules that are now over twenty years old—and thus reflect a very different video marketplace—give programmers a stranglehold over video content and prevent small providers from negotiating market-based rates for programming. Increasingly, customers are facing blackouts of channels due to programmers' "take it or leave it" tactics, which are technically prohibited but occur frequently. In addition, evidence suggests that small and medium video providers pay up to twice the rates that large companies do for the same programming. And some types of content that is necessary for a viable service offering, notably sports programming, may be subject to even higher rates if it is available at all.

In addition, recent years have seen a spike in instances where separately owned stations within the same market coordinate their retransmission consent negotiations. Such "coordination" has enabled separately-owned broadcasters to command retransmission consent prices that are 21 percent to 161 percent higher than each station negotiating on its own behalf could command on its own.¹⁰ These high rates are in turn passed on to consumers and decrease competition in the local television market.

Customers must also pay ever-higher prices for video programming they do not even want because programmers force providers to buy multiple unwanted channels, and place them in basic service tiers, in order to have access to channels that customers demand. This "forced tying" prevents small providers from offering more affordable packages of channels, and is raising prices to unsustainable levels.

Technology and the video marketplace have changed drastically since the current program access regime was enacted over 20 years ago. Just as we are talking about the need to re-evaluate rules in the context of an IP evolution in communications networks, it is far past time for policy makers to reform these outdated rules and encourage, rather than impede, video competition and broadband deployment.

Wireless Issues

Rural consumers require access to a strong and reliable wireless network and rural carriers are attempting to meet that demand despite monumental challenges. Essential to a robust wireless market is an interconnected wireline network. The demand for high capacity fixed wireline broadband to support wireless networks will only increase as usage of handheld devices grows. But rural carriers must also know they will be able to fully complete in the wireless marketplace before they will attempt to continue to expand their networks through effective use of spectrum. A lack of interoperability across the 700 MHz spectrum may lead to spectrum lying fallow or islands of rural service with devices that cannot be used outside of a customer's home service area. A lack of fair and reasonable data roaming agreements with large carriers compounds the problem, creating barriers even when spectrum is interoperable. Furthermore, rural carriers often lack access to the equipment and handsets that are available to larger carriers. At a time when carriers are trying to diversify and make good use of spectrum assets, the lack once again of clear "rules of the road" leaves smaller operators largely at the mercy of larger carriers.

Finally, as the FCC moves forward with the upcoming 600 MHz auction plan it is essential that the agency allow meaningful participation by small rural and regional carriers. Most importantly, the FCC should allow carriers to bid on small license areas which will promote competition throughout the country.

Conclusion

NTCA's membership wants to continue and build upon the success story of rural broadband deployment in their hard-to-serve territories, but they will only be able to do so once regulatory certainty is returned to their operations and if there is sufficient and predictable USF support that has been reoriented for a broadband world. We look forward to continuing to work with Congress and the FCC to get it right. Our nation's economic success—its access to natural resources, energy production, and food production, for example—depends on getting this right.

⁸MB Docket No. 05–311, 22 FCC Rcd 5101, 5132–33, ¶62 (2007).

⁹See NECA comments, GN Docket Nos. 09–47, 09–51, 09–137 (filed Dec. 7, 2009), p. 6.

¹⁰See ACA comments, MB Docket Nos. 09–182 and 07–294 (fil. Mar. 5, 2012), p. 9

Senator PRYOR. Thank you.
Mr. James?

STATEMENT OF JERRY JAMES, CEO, COMPTTEL

Mr. JAMES. Chairman Pryor, Ranking Member Wicker, and the members of the Subcommittee, on behalf of the 200-plus COMPTTEL members, I want to thank you for the opportunity to appear today and talk about the status of the wireline communications industry.

My name is Jerry James. I am the CEO of COMPTTEL, which has a 31-year history as the largest trade association for the competitive communications industry, with members providing all forms of communications services from voice, data, video, managed services, cloud, Ethernet, using every form of technology available to deliver service to their customers.

Many of COMPTTEL's members are small and medium-sized businesses themselves while we do have large members who are national companies with thousands of employees. This committee has a history of supporting pro-competitive policies such as the 1996 Act. Our members are proving this committee is correct in its support of these policies by the fact that COMPTTEL members are serving every segment of the telecommunications market on which this subcommittee has held status hearings: rural, wireless, video, and now wireline.

On a personal note, in my years in the industry in the competitive companies in Texas, I have seen firsthand how pro-competitive policies drive the creation of advanced services, innovation, deployment of technology solutions, while also creating new jobs, new companies and economic growth through private investment.

Today I want to emphasize that the foundation that allows COMPTTEL members to offer all of these services is the wireline network. Wireline is the central nervous system of all the communications networks. Whether it is wireless, video, rural, or all the applications and advanced services that go with them, they depend on a competitive wireline industry.

The wireline industry, as the industry transitions to IP, relies on two specific pro-competitive policies that ensure a functioning free market: last-mile access and IP interconnection. Last-mile facilities are the bottleneck for consumers who want to access the services and technologies our members provide. COMPTTEL members have invested billions of dollars constructing fiber networks and adding electronics to increase the bandwidth capacities of copper facilities, which remain highly valuable and a vital part of the communications infrastructure. Yet, they could not be expected to overbuild an entire network.

This is even more crucial in the business market where the largest ILEC's still maintain significant market power. Whether the issue is special access, copper retirement, or access to packetized facilities, there is no escaping the fact that last-mile access is a vital input for competition.

Sound interconnection policy, regardless of the technology or network, must remain in place for functioning markets. In fact, in regard to the issue of IP transition, there is a wide agreement amongst competitive carriers, including CLECs, some cable compa-

nies, rural ILEC's, and wireless providers, that the FCC should confirm that the interconnection provisions of the 1996 Act apply with respect to managed VoIP services to provide the certainty needed for the IP transition to accelerate.

It is important that Congress and the FCC recognize that residential and business markets have distinguishing characteristics. Businesses choose telecommunications service in a much different way than residential customers. While a customer may choose to forgo certain levels of quality and reliability for the sake of price, businesses cannot afford the same tradeoffs. Yet, it should be clear that everyone deserves reliable, high quality voice services.

Finally, all these issues are wrapped in the IP transition. Let us be clear. This is not about the Internet, but just a different signaling protocol for managed voice traffic. IP is nothing new to our members. We have been deploying it for decades, some since 1999. Competitive companies have always leveraged new technologies to drive innovation where the largest incumbents have been slow to do so. But the important note here is that the IP transition is just that: a transition. It is no different than any other technology evolution that the network has undergone since its inception.

Competitive providers have been leading this transition and we are willing to do it in the future and bring about a new wave of innovation. But we are at a crossroads. Basic, fundamental rules that ensure competition and consumer choice remain vital. It is important that customers continue to reap the benefits of new technologies and of innovations brought forth by competition. To ensure this, the FCC and Congress must continue to embrace pro-competitive policies such as last-mile access and IP interconnection that will drive investment, innovation, and more choice in the marketplace.

Thank you for the opportunity to appear today, and I am happy to answer any of your questions.

[The prepared statement of Mr. James follows:]

PREPARED STATEMENT OF JERRY JAMES, CEO, COMPTTEL

Chairman Pryor, Chairman Rockefeller, Ranking Member Wicker, Ranking Member Thune and members of the Subcommittee, on behalf of our COMPTTEL members, I thank you for the opportunity to appear today to discuss the status of the wireline communications industry.

My name is Jerry James and I am CEO of COMPTTEL, the oldest and largest trade association for the competitive communications industry. COMPTTEL started more than 30 years ago and today, our association has more than 200 members, including local competitors, broadband providers, wireless carriers, cloud service providers, supplier and professional partners. COMPTTEL's membership is diverse. Nearly two-thirds of COMPTTEL's members are small and medium-sized businesses, a majority of which have \$10 million or less in revenue and fewer than 100 employees. We also have a number of large national companies with thousands of employees. COMPTTEL member companies utilize private investment to drive technological innovation and create economic growth with their competitive broadband, voice, video, Internet, data and other advanced services. Members of the competitive industry continue to be the entrepreneurial innovators. They were the first to deploy DSL in the mid-1990s. And, for the last decade, they have been the first to deploy next-generation, Internet Protocol (IP)-based managed networks that utilize copper, fiber, and wireless technologies. Whether COMPTTEL members are helping businesses meet their increasing bandwidth needs by providing Ethernet services, saving small businesses thousands of dollars each month in IT costs by offering cloud-based solutions, or enabling telemedicine by providing telecommunications services to rural health care facilities, they are the companies fostering innovation, investing

in new facilities to reach their customers, and creating jobs across the United States.

COMPTEL members are serving every segment of the market on which this subcommittee has held status hearings: rural, wireless and video and they are largely running and growing their businesses with private investment and very little, if any, support from Federal programs. But it is important to emphasize that the key element that allows COMPTEL members to offer these services is the *wireline network*.

Wireline networks are, and will continue to be, an essential component of the communications marketplace for the foreseeable future. Wireline remains the communications medium of choice for small, medium, and large businesses, as well as a significant segment of the consumer market. Businesses, in particular, require reliable, high-quality telecommunications services, along with cutting-edge features to conduct their day-to-day operations. For this reason, the ability to obtain Quality of Service (QoS) and Service Level Agreements (SLAs) is paramount to their operations. A small startup, a customer call center, or a tech support office cannot afford to have poor voice quality, or intermittent dial tone. Nor can these businesses afford to have unreliable broadband Internet access service. In fact, they would soon be out of business without reliable wireline voice and data services. This is a crucial point to remember as I address the continued need for the competitive opportunities Congress provided for in the Telecommunications Act of 1996 ("the Act"). Our members have relied on this law as they invested private capital, which has led to, and continues to result in, innovative service offerings and better prices for consumers.

Furthermore, wireline is an integral element of the Nation's communications infrastructure. The advances in wireless, specifically 4G/LTE in today's market, depend on the wireline network to handle the tremendous increase in data consumption that is predicted in the coming years. Cisco estimates that "[b]y 2017, almost 21 exabytes of mobile data traffic will be offloaded to the fixed network by means of Wi-Fi devices and femtocells each month. Without Wi-Fi and femtocell offload, total mobile data traffic would grow at a Compound Annual Growth Rate (CAGR) of 74 percent between 2012 and 2017 (16-fold growth), instead of the projected CAGR of 66 percent (13-fold growth)."¹ Spectrum remains a finite resource. To ensure wireless networks can manage their ever-increasing demand, carriers off-load traffic to wireline networks so it can traverse to its destination.

Competitive Companies Continue to Lead the Way in the IP Transition

The transition of networks to IP technology is just another step in the evolution of the network. Competitive telecommunications companies have been at the forefront of the IP transition for over a decade. Some of our members have been all-IP since 1999. Since 2009, competitors have been asking the Commission to take action to ensure that the ILECs (AT&T and Verizon, in particular) comply with their obligations under Sections 251 and 252 of the Act and allow competitors to exchange managed voice traffic with them at points on their network where they have IP facilities, so consumers may experience the full benefits of VoIP.² To be clear, we are not talking about "Over the Top" (OTT) VoIP or the Internet, but managed voice traffic exchanged between carriers.

As the FCC's recent Public Notice on the IP Transition recognizes, VoIP interconnection has been happening all over the world "at a rapid rate" yet it has been delayed in this country notwithstanding "the efforts of some cable companies and competitive local exchange carriers."³ This delay is not technical. Rather, it is the result of the largest ILECs ignoring the Act's interconnection obligations. These large ILECs continue to require competing carriers to convert traffic to legacy TDM-format prior to delivering it to the ILEC even where the ILEC itself has deployed facilities that could transport the traffic in packet form on its own network. This forced conversion increases cost for unnecessary media gateways, and reduces voice quality for consumers because of the unnecessary protocol conversions. The data clearly shows that the largest ILECs serve the largest share of voice subscribers⁴

¹ See Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2012–2017, available at http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-520862.html.

² Letter of William H. Weber, Cbeyond, et al., to Marlene Dortch, GN Docket No. 09–51, p. 1, filed Sept. 22, 2009.

³ *Technology Transitions Policy Task Force Seeks Comment on Potential Trials*, GN Docket No. 13–5, Public Notice, DA 13–1016 (Technology Transitions Policy Task Force, May 10, 2013) (*Notice*) at 4.

⁴ The FCC's most recent local competition report indicates that the PSTN (defined here as retail switched access lines and VoIP subscriptions) consists of just over 141 million retail local telephone connections (as of June 2012). Source: Local Telephone Competition, Status as of

and, therefore, are the largest traffic exchange partners for all voice providers. Larger network operators have no incentive to interconnect with smaller. As a result, as the FCC stated in the Local Competition Order (¶55) “Incumbent LECS have no economic incentive . . . to provide potential competitors with opportunities to interconnect with and make use of the incumbent LEC’s network.”

Last Mile Access and Interconnection are Vital to the IP Transition’s Success

Both Congress and its expert agency, the FCC, must keep in mind that the marketplace would not be where it is today, but for the requirements of last mile access and interconnection. Those two provisions are the foundation on which local competition was able to develop and grow and are technologically neutral. The provisions were enacted by Congress, which recognized that without them, competition in the local market would be unsustainable. Though some say those provisions are no longer needed, the reality is that last mile access and interconnection are still required to ensure a competitive wireline marketplace today and these provisions must continue to be enforced by the FCC.

Access to Last Mile Facilities is Critical to Bringing Consumers Broadband Services and Cutting-Edge Technologies

Competitive providers have invested billions of dollars constructing facilities to serve their customers. However, competitors continue to face significant barriers to building their own last mile facilities because the fact remains that the large ILECs still have the advantages of incumbency (and a 100 year head start) to achieve a cost structure that no competitor can achieve. The largest investment costs associated with deploying an IP network (as with any network) exist at Layer 1 (the Physical Layer) with the infrastructure and facilities—including costs to obtain space on as poles, rights of way, conduit, local permitting, and buildings—not with higher layers that electronically define and control traffic flows. By contrast, large incumbent carriers, such as AT&T and Verizon, have ubiquitous networks that they inherited as a result of their historical monopoly. In light of these facts, it is not surprising that the Government Accountability Office, the Department of Justice, and the FCC have all found that in the vast majority of locations in the country, incumbents control the only wireline connection that can be used to serve business customers. AT&T and Verizon have exploited this control to secure an 80 percent share of the market for dedicated, high-capacity broadband circuits—known as “special access”—that are used to deliver reliable and high-speed services to American businesses.

The large incumbents have used their overwhelming market power to charge exorbitant prices to competitive carriers that seek to purchase special access circuits and use them to provide innovative business broadband services. For example, a recent analysis commissioned by COMPTTEL shows that AT&T’s prices for so-called packet-based “Ethernet” special access circuits are between six and 11 times higher than prices for comparable services.⁵

The large incumbents further use their market power to impose anticompetitive terms and conditions through exclusionary, “demand lock up” plans on competitive carriers seeking to purchase special access. For example, in many areas, in order to obtain a “discount” on circuits for which a purchaser has no alternative supplier (*i.e.*, the vast majority of circuits), the purchaser must commit to buying the majority of its total circuit demand from the incumbent—including circuits for which a cheaper alternative may be available. In addition, large incumbent LECs include “take or pay” provisions in their special access contracts so purchasers that do not meet their volume commitments are nonetheless required to pay for any committed but unused circuits.

The large incumbents’ failure to offer special access circuits on just and reasonable rates, terms, and conditions—as required by the Communications Act—not only threatens innovation and investment in business broadband, but also has consequences for the larger economy. A recent study, found that failure to reform the FCC’s special access policies, among others, could result in a loss of as many of

June, 2012, Industry Analysis Division, Figure 1, page 2. Of this, AT&T, Verizon and CenturyLink (the ILECs that coincidentally seek to escape their interconnection obligations) serve 51 percent of the total connections. Sources: AT&T 10Q 2Q2012 at 18; Verizon 10Q 2Q2012 at 30; and CenturyLink 10Q2012 at 30. If the “PSTN” is defined to include mobile subscriptions, AT&T and Verizon (including their mobile affiliates), as well as CenturyLink, serve 61 percent of the total connections. Sources: AT&T 10Q 2Q2012 at 18; Verizon 10Q 2Q2012 at 27; and CenturyLink 10Q2012 at 30.

⁵ Evaluating the Just and Reasonableness of BOC Ethernet Offerings (dated Apr. 2013), Attachment A, to Comments of CompTel, WC Docket No. 05–25, filed Apr. 16, 2013.

300,000 existing jobs in the telecom sector and a reduction of up to \$30 billion per year in capital expenditures in U.S. telecommunications networks.⁶

Congress should urge the FCC to take swift action to prevent these harms. *First*, the agency should use the existing record in the long-pending special access rule-making proceeding to adopt interim rules to address incumbent carriers' exclusionary, special access "demand lock up" plans. *Second*, while the FCC has adopted a mandatory information collection to gather data on special access prices, terms, and conditions, it has not yet submitted that information collection to the Office of Management and Budget for approval. The agency should do so as soon as possible. *Third*, the FCC should use the information it collects to conduct a market power analysis and adopt comprehensive final rules that govern the rates, terms, and conditions on which incumbent LECs must offer wholesale access to last-mile facilities in the geographic and product markets in which they possess market power. And those rules should apply to both so-called legacy, "TDM-based" last-mile facilities and newer, packet-based last-mile facilities.

There is no question that the large ILECs use the advantages of incumbency to achieve more economical cost structures in network deployments. For instance, Verizon's FiOS fiber network not only shares the same infrastructure that houses its copper facilities, its copper network also becomes the supporting infrastructure when Verizon lashes the fiber directly to the copper cable. AT&T's U-verse architecture exploits the preexisting copper network to an even greater extent, as it relies on the existing local copper loop (albeit shortened) to connect individual subscribers to its U-verse fiber. As AT&T explains:

AT&T does not have two separate outside plant networks. For its high-speed U-verse services, AT&T deployed fiber from central offices to specialized field terminals, after which U-verse services travel to the customer's location over copper facilities. The copper and fiber infrastructures combine to make a single seamless network.⁷

AT&T's cable and wire facilities were deployed over many decades and the deployment was protected by regulatory policy and subsidies.⁸ The costly physical assets that underlie the IP networks of Verizon and AT&T are the same assets that have served as the PSTN for years. In addition to these physical assets, these ILECs are leveraging the other great benefit of incumbency: a still massive customer-base.⁹

Finally, where it is not feasible for COMPTTEL members to build their own facilities, many are investing in technologies that maximize the bandwidth capacity and speed of the existing copper network. Members are offering Ethernet over Copper (EoC) services to small and medium-sized businesses that allow for high-speed broadband services. Moreover, as fiber has still not been deployed to a large percentage of buildings, copper remains a critical resource for delivering high capacity broadband services to these buildings.

Some large incumbents have begun to remove existing copper facilities over which EoC services are provided. Unfortunately, because the FCC has permitted incumbents to deny competitors access to other facilities, including packetized facilities, that enable the delivery of broadband services, the competitive alternatives available to customers diminish or disappear. The FCC must revise its current rules to take into account not only the continued value of existing network infrastructure, but also competitor access to advanced broadband facilities continues to best serve consumers.

⁶Susan M. Gately *et al.*, "The Benefits of a Competitive Business Broadband Market" (April 2013).

⁷Reply Declaration of Betsy Farrell Supporting Comments of AT&T California, Before the California Public Utilities Commission, Rulemaking to Evaluate Telecommunications Corporations Service Quality Performance and Consider Modification to Service Quality Rules, Rulemaking 11-12-0001, filed March 1, 2012, at ¶43.

⁸Although the Commission's ICC reform seeks to end the system of access support, the fact is that the system went on for decades and the local networks of the ILECs are largely fully depreciated. Nationally, in 2007, which is the last year the FCC required that this information be made public, 73 percent of the Total Plant in Service had been depreciated, and nearly 75 percent of the Cable and Wire Facilities had been recovered. 2007 ARMIS 43-04, Total Large ILECs, Rows 2260, 3080, 1530 and 3060.

⁹AT&T serves over 39 million wireline voice connections, while Verizon serves over 24 million wireline voice connections. AT&T data available at <http://www.att.com/gen/investor-relations?pid=262>, 4Q2011, Financial and Operating Results (PDF), page 13 of 21. Verizon data available at http://www22.verizon.com/investor/qreport/quarterly_earnings_verizon_4q_2011_01242012.htm, 4Q2011, Financial and Operating Information (PDF), page 16.

Sound Interconnection Policy is Vital for Functioning Markets

It is vital for any successful communications policy to guarantee the ability of service providers to interconnect with other providers, regardless of the technology used in the underlying networks. As long as we maintain and promote a strong interconnection policy in telecommunications services, investment is higher, prices are more competitive, jobs and productivity increase, and innovation flourishes.

IP-to-IP Interconnection for Exchanging Voice Traffic is Nothing New Under the Act

Congress mandated interconnection between competing providers in the 1996 Act because it understood the history of the industry and that competition itself does not ensure interconnection between providers, especially where some are much larger than others, and possess market power. Sections 251/252 provide for interconnection at any technically feasible point, at just and reasonable rates, and the opportunity for arbitration where the parties' negotiations fail. These protections continue to be necessary as the PSTN transitions from TDM to IP transmission technology. Congress has already established the framework for negotiations and minimum requirements, as well as the process for the arbitration/approval of interconnection agreements. Additionally, the FCC's record is complete in demonstrating that VoIP interconnection falls within that framework. In its universal service/intercarrier compensation order that was released in November 2011, the FCC found that IP interconnection for voice services is critical, that the interconnection provisions in the statute are technology neutral, and that it expected carriers to negotiate in good faith in response to requests for IP-to-IP interconnection agreements for the exchange of voice traffic.

There Is Widespread Agreement that the Communications Act's Interconnection Provisions Still Apply

The FCC is actively considering IP interconnection issues in its universal service/intercarrier compensation proceeding. The record is complete and industry members, including cable providers, rural ILECs, and wireless providers, overwhelmingly support a ruling from the FCC that the ILECs must negotiate VoIP interconnection agreements. The reasons for this support are that:

- (1) the largest ILECs have ubiquitous networks in their service territories with access to every home and business;
- (2) these same ILECs continue to serve the majority of both business and residential wireline consumers in the U.S.; and
- (3) alternative providers cannot compete if they do not have an interconnection agreement with the ILECs.

Today, our members only have interconnection agreements with the ILECs to exchange traffic in TDM format, and it is widely recognized that the transition to IP in the U.S. has been slowed by the lack of interconnection with the major ILECs. Indeed, the FCC's own Technology Advisory Council observed that the major ILECs are slowing the transition by refusing to negotiate interconnection agreements and that the FCC could speed the process by answering the critical question of whether Sections 251/252 of the Communications Act apply to VoIP interconnection.

The technical feasibility of VoIP interconnection has already been established. The largest ILECs have the facilities in their networks to exchange voice traffic over the PSTN with other carriers on an IP-to-IP basis. All that is truly needed to move the industry forward in the transition is for these ILECs to comply with the interconnection provisions of the Act. Consumers should not have to wait any longer to reap the benefits of this new technology. Accordingly, the Commission should address the IP policy framework and confirm that Sections 251 and 252 apply to IP-to-IP interconnection.

The Importance of Managed Networks for Voice Services

Managed VoIP service is voice service transmitted using IP technology over wireline, wireless, and coaxial cable networks. Unlike the services over the Internet, managed IP services, including managed VoIP services, can provide the kind of service-level guarantees that businesses expect. The Internet is a "best efforts" network, which means that traffic is routed and congestion controlled based on the principal of "first come, first routed." In contrast, managed IP services can match performance

to the particular needs of different information flows obtained through traffic management techniques.¹⁰

Consequently, managed voice services remain the dominant form of voice communications in the U.S., even when just looking at VoIP service. While some consumers may find an OTT VoIP service that is transmitted over the public Internet sufficient for their needs, the majority do not. This conclusion is supported by the fact that only 10 percent of all U.S. VoIP subscribers use OTT VoIP services.¹¹

Indeed, AT&T and Verizon's own product design and marketing for their managed VoIP services demonstrate the need to assure customers that their voice service does not traverse the Internet. AT&T confirms to its customers that "AT&T U-verse Voice service is provided over AT&T's world-class managed network and not the public Internet."¹² Likewise, Verizon explains to its customers that its managed VoIP service "is not the same as the services you get with a little Internet adapter for your modem and phone, and it does not ever touch the public Internet."¹³

Nonetheless, a common, inaccurate theme echoed by AT&T and Verizon is that the mere existence of Internet peering and transit agreements demonstrates that unregulated interconnection agreements for managed voice services will allow competition to flourish. However, what AT&T and Verizon neglect to plainly state is that the peering agreements used to move Internet traffic that they cite so freely *are not* used to terminate traffic to their FiOS and U-verse customers because those customers receive managed voice services. While the FiOS and U-verse networks use IP transmission technology, the traffic does not traverse the public Internet.

In fact, there is no question that these managed VoIP services differ from the public Internet, nor is there any question that the exchange of this traffic will be subject to agreements that differ from the Internet peering arrangements that AT&T and Verizon continuously and erroneously cite. The only relevant question is whether IP interconnection agreements and network arrangements will be nondiscriminatory, reciprocal and public (which are the core requirements of Sections 251 and 252), or offered only to favored partners, distorted by one-sided compensation obligations, and secret.

Conclusion

Congress should encourage the FCC to examine solutions and policies that allow consumers and businesses to continue to reap the benefits of the competitive telecommunications marketplace. It is not just about access for competitive telecommunications providers. It is about ensuring that the Nation's businesses continue to have access to cutting-edge digital technologies and applications that drive value and growth. The ability of competitive service providers to interconnect and access the underlying communications infrastructure on reasonable terms and conditions, while maximizing existing infrastructure, will continue to provide consumers and businesses with the tools they need to succeed and increase economic growth and opportunities throughout the Nation.

Senator PRYOR. Thank you.
Mr. Downes?

STATEMENT OF LARRY DOWNES, INTERNET INDUSTRY ANALYST AND AUTHOR

Mr. DOWNES. Thank you, Chairman Pryor and Ranking Member Wicker, members of this subcommittee. Thank you for this opportunity to testify today on the state of wireline communications.

My name is Larry Downes. I am based in Silicon Valley, and I am an Internet industry analyst, the author of several books on the

¹⁰ See NRRI white paper entitled "The Transition to an All-IP Network: A Primer on the Architectural Components of IP Interconnection" available at <http://communities.nrri.org/documents/317330/7821a20b-b136-44ee-bee0-8cd5331c7c0b>.

¹¹ Local Telephone Competition, Status as of June, 2012, Industry Analysis Division, Figure 5, page 7. http://transition.fcc.gov/Daily_Releases/Daily_Business/2013/db0621/DOC-321568A1.pdf.

¹² AT&T: How AT&T U-verse Voice is different from the digital voice products of other providers, available at <http://www.att.com/esupport/article.jsp?sid=KB401031#fbid=L8RYx19uzva>.

¹³ Verizon Press Release, "FiOS Digital Voice: Here's How It Works, Verizon's Managed IP Network Links Customers' Homes to Softswitch and Applications Service, Enabling Innovative Services," June 3, 2010, available at <http://newscenter2.verizon.com/press-releases/verizon/2010/fios-digital-voice-heres.html>.

information economy, innovation, and the impact of regulation. I have also written extensively on the effect of communications regulation on the dynamic broadband ecosystem and, in particular, the role played by the FCC and local regulators.

This is, obviously, an exciting time to be talking about the state of wireline. As you all know, the communications industry is in the midst of its most profound technological transformation in over a century of evolution. The old public-switched telephone network, the PSTN, is quickly being succeeded by native IP networks, the foundation of the modern Internet.

Quite simply, the IP transition is already happening. As many as half of all U.S. homes have already cut the cord to the PSTN, a number that could rise to 75 percent by 2015. They have moved to all IP broadband networks delivered over a range of infrastructure technologies, including cable, fiber, satellite, and mobile.

And they have moved for a good reason. The regulated PSTN world is static. It offers voice services in a world where voice has not only become just one of many forms of communication, but increasingly one of the least favored. For data traffic, it offers slow data speeds, too slow to support fast-growing high definition video applications. We now have better and cheaper technology available to us. When that happens, as history makes abundantly clear, it is only a matter of time before consumers make the switch and increasingly less time at that.

Critics of an accelerated IP transition warn of the risk of leaving behind the remaining Americans who still rely solely on PSTN, particularly in rural communities and among some elderly and low-income households.

We in Silicon Valley see it very differently. We believe that the faster we can shut down the obsolete PSTN network, the faster we can help those users who still rely on it make the leap to the 21st century to broadband Internet and all it has to offer.

According to research from the Pew Internet study, 20 percent of American adults still do not use the Internet, a group that nearly perfectly overlaps with those still tied to the PSTN network. Sadly, nearly half of that group give as their primary reason not the cost of broadband services but simply that they do not think there is anything there for them. Moving them to an all IP network, if only for voice, will get us halfway toward showing them otherwise. The other half should be easy or at least easier.

I share the worthy goal of the FCC's 2010 National Broadband Plan of full broadband adoption as soon as possible and for the reasons the plan's authors so ably spelled out. We want everyone on the Internet, not just at home but around the world. The Internet exhibits what economists call "network effects," which means that the more people and devices and apps that use it, the faster its value increases.

With the PSTN network off and everyone transitioned to native IP networks, we can that much sooner build out the next generation of Internet services that will revolutionize education, health care, energy, employment, community, public safety, and entertainment.

There are, of course, many complicated issues to be resolved in shutting down the PSTN, which is why the FCC is now considering

petitions for trials in select markets. Many of those submitting comments paint dramatic, doomsday scenarios even from simple trials. Frankly, the most extreme concerns were raised by self-interested parties eager to slow the transition to a speed more suited to their own business strategies. But conducting the trials in any case will make abundantly clear which are real and which are ephemeral.

We still have to solve potentially thorny transition issues, including public safety and ancillary technologies such as security systems, health monitoring equipment, and others that today require a connection to PSTN in order to function.

But technology entrepreneurs believe that the best solution to a technology problem is more technology, not more government mandates, byzantine regulatory structures that lend themselves to abuse. Set a date for IP transition and watch how fast the remaining technological and business hurdles evaporate as innovators do what they do best, solve problems on deadline.

As I describe in my written testimony, however, there is a clear and inevitable role for Congress and the FCC to play in bringing the extraordinary benefits of broadband IP to everyone, much as there was in the transition from analog to digital television. But we should heed the lessons of that flawed earlier effort. For one thing, we need to set aggressive targets and stick to them. If we do, the problems, real and imagined, will largely take care of themselves.

Thank you and I look forward to your questions.

[The prepared statement of Mr. Downes follows:]

PREPARED STATEMENT OF LARRY DOWNES,¹ INTERNET INDUSTRY ANALYST
AND AUTHOR

Chairman Pryor, Ranking Member Wicker and members of the Subcommittee, thank you for this opportunity to testify on the state of wireline competition.

My name is Larry Downes. Based in Silicon Valley, I am an Internet industry analyst and the author of several books on the information economy, innovation, and the impact of regulation. I have also written extensively on the effect of communications regulation on the dynamic broadband ecosystem, and in particular the role played by the FCC and local regulators.

Summary

Wireline communication is in the midst of its most profound technological transformation in over a century of evolution. The old public-switched telephone network (PSTN) is joining other obsolete networking technologies in converting to the packet-switched network protocols of the Internet (IP). Analog equipment is being replaced with digital; copper is being replaced or supplemented with fiber optic cable. Voice, video and data are converging onto a single standard, and moving over a single global network infrastructure.

The emerging communications ecosystem, which includes broadband networks using fiber, cable, satellite and mobile technologies, is exponentially more efficient, extendable, and powerful than the separate, aging networks it is replacing. It offers new services that were unimaginable just a few years ago, and promises to accelerate its offerings in the coming decade. It is generating profound economic growth and new competitive advantage for American businesses that are leading the revolution.

The nature of wireline competition has changed utterly, and will continue to evolve as IP our technology industries complete their conversion to Internet standards. Wireline network operators, as the FCC acknowledges, increasingly compete

¹Larry Downes is an Internet industry analyst and author. His books include *Unleashing the Killer App* (Harvard Business School Press, 1998), *The Laws of Disruption* (Basic Books, 2009) and *Big Bang Disruption: Strategy in an Age of Devastating Innovation* (Penguin Portfolio, forthcoming 2013).

not only with each other but with providers of mobile and other broadband networks, as well as cloud hosting and digital commerce services, content providers, consumer electronics device manufacturers, and operating system and other software developers.² Already, American consumers are enjoying the benefits of highly competitive, integrated markets for all manner of communication and information services.

While phone companies once dismissed the Internet as an inferior communications protocol for voice, carriers large and small have now embraced it. As switched network technology matured, IP has zoomed ahead, supporting exploding demands from consumers, small businesses, cloud-based services, and the coming deluge of machine-to-machine communications known as “the Internet of Things.” This new ecosystem is emerging organically from the deployment of robust, global broadband IP networks, a dividend from over \$1 trillion in private funding invested in IP-based technologies in the first decade of the commercial Internet.³

Not surprisingly, the communications industry itself is being affected more profoundly than any other by disruptive technologies. But the transition to an all-IP network follows a pattern in disruptive technological innovation I have been studying for most of my career. In our recent *Harvard Business Review* article, “Big Bang Disruption,” my co-author Paul F. Nunes and I reported on research into a new model of technology-based innovation, one that is dramatically remaking every sector of the global economy, and in record time.⁴

This accelerating pace of industry change, I believe, has profound implications for the regulatory process, particularly for agencies operating at the center of what Joseph Schumpeter once called “the perennial gale of creative destruction.”⁵

Dynamic, technology-driven markets, for example, increasingly remedy their own harms more quickly and far more efficiently than regulators can. As change accelerates, on the other hand, the deliberative pace of regulation increasingly means that by the time laws are passed and rules are made, consumers, markets, and providers have long since moved on.

Under laws that date back nearly a century, regulatory agencies such as the FCC continue to tinker with 21st century problems using a 19th century toolkit. They are encouraged to do so by the siren song of competitors who prefer to lobby than to evolve, and by state and local regulators who fear they will play a far smaller role in the broadband future.

But it is simply impossible even for those of us in Silicon Valley and other technology hubs to anticipate how future technology improvements will evolve and the kinds of markets they will both create and destroy. Government must admit to its institutional hubris. Today’s laws and regulatory rules reflect a profoundly dangerous belief that, despite being disconnected from the messy realities of rapid technology change, regulations can nonetheless predict the future and head off consumer harms that haven’t yet occurred.

But regulators cannot imagine what is to come, even in the short term. No one can. Instead Silicon Valley investors have refined the art of making small bets on a range of experiments, watching closely to see which ones consumers embrace.

Increasingly, the risks of government getting it wrong outweigh the benefits, if any, of intervention.

I urge this Committee, in its analysis of communications and technology markets and industries, to consider adding a healthy dose of technological humility—of adopting a “watchful waiting” principle for disruptive technologies, and Hippocratic-like oath to “first do no harm.” Legislate only when it’s clear that there is demonstrable harm to consumers, a remedy that isn’t so broad as to cause unintended negative side effects, and no reasonable hope that the next generation of technology will moot the problem before new rules can be crafted.⁶

²Larry Downes, *FCC Refuses to State the Obvious: Mobile Market is Competitive*, CNET NEWS.COM, April 3, 2013, available at http://news.cnet.com/8301-1035_3-57577630-94/fcc-refuses-to-state-the-obvious-mobile-market-is-competitive/.

³See Reed Hundt & Blair Levin, *THE POLITICS OF ABUNDANCE: HOW TECHNOLOGY CAN FIX THE BUDGET, REVIVE THE AMERICAN DREAM, AND ESTABLISH OBAMA’S LEGACY* 9 (2012).

⁴Larry Downes & Paul F. Nunes, *Big Bang Disruption*, HARVARD BUSINESS REVIEW, March, 2013, at 44, available at <http://hbr.org/2013/03/big-bang-disruption/ar/1>.

⁵Joseph A. Schumpeter, *CAPITALISM, SOCIALISM, AND DEMOCRACY* (Harper 3d ed. 2008) (1942).

⁶Larry Downes, *Toward a Technology ‘Watchful Waiting’ Principle*, TECHNOLOGY LIBERATION FRONT, Jan. 17, 2013, available at <http://techliberation.com/2013/01/17/toward-a-technology-watchful-waiting-principle/>. See also Geoffrey A. Manne & Joshua D. Wright, *Innovation and the Limits of Antitrust*, George Mason Law & Economics Research Paper No. 09–54 (Oct. 27, 2012) (“It is because of these dynamic and often largely unanticipated consequences of novel technological innovation that both the likelihood and social cost of erroneous interventions

My testimony addresses the most significant regulatory challenge facing the wireline industry today: the transition to all-IP networks and the accelerated retirement of the obsolete PSTN. I will describe what I see as the most productive role for Congress and the FCC in supporting that transition, and the benefits of universal broadband adoption and economic growth that will result from getting it right. I will also discuss the particular issue of IP-to-IP interconnection, and lessons learned from the flawed but ultimately successful transition, last decade, from analog to digital television.

Accelerating the IP Transition⁷

The IP-based ecosystem reduces economic friction to dramatic effect. In information industries more than anywhere else, entrepreneurs now develop new products and services in real-time. Indeed, early users are increasingly co-developers, participating in product design, financing (through services such as Kickstarter), marketing and even customer service. The result is a new kind of technology disruptor, the “big bang disruptor”: one that enters the market as a cheaper, higher-quality, and more customizable substitute for existing products offered by incumbent providers.

In response to the sudden abandonment of older products and services by consumers with easy access to new big bang disruptions, many incumbents fail to adapt, unable to accept the death of the generation of core technologies on which their companies were built.

Challenging much of the conventional wisdom of strategy and competition, my co-author and I argue that incumbents, if they are to survive, must learn to see disruption coming much sooner and react decisively and quickly. Incumbents trained by a generation of strategic planning theory to wait for new markets to mature before beginning the transformation of their core business have waited too long. Many don’t survive the transition.

Big Bang Disruption is nowhere more visible than it is in the communications industry itself. It is hard to overestimate the magnitude of the shift taking place in our technology infrastructure. Like many of the industries in our study, the transformation is following a familiar pattern. As disruptive technologies become both better and cheaper, customers abandon older products and services gradually, and then suddenly.

This is especially true for legacy PSTN providers still operating under Title II of the Communications Act.⁸ For legacy PSTN providers, pricing, quality, and access to infrastructure by competitors are all regulated on the slower clock speed of government agencies. As their customers migrate to better and cheaper alternatives that are free of such regulations, the added gravitational pressure on the incumbents, who must continue to operate as common carriers, becomes unbearable.

PSTN providers can’t beat better and cheaper with worse and more expensive, especially when worse and more expensive has to stay that way as a matter of law.

They must move faster. Customers are abandoning wired telephone service in favor of fiber and cable-based Voice over IP (VoIP) and mobile broadband at a remarkable rate. At its peak, the PSTN network connected nearly every American. By the end of 2011, less than half of all American homes still had a wired connection. That number could fall to as little as 25 percent by 2015.⁹

The disruptor here, of course, is networking technology that operates natively using the packet-switching protocols of the Internet. IP networks, crucially, don’t care if the packets contain voice, data, or video content. While phone companies once dismissed IP as unsuitable for voice communications, carriers large and small have now embraced IP as the only option to satisfy exploding demand of consumers, cloud-based services, and the coming data deluge of machine-to-machine communications known as “the Internet of Things.”

against innovation are increased.”), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1490849.

⁷Some of the comments that follow are derived from Comments filed with the FCC that I filed jointly with TechFreedom and the International Center for Law & Economics. See *How the FCC Can Lead the Way to Internet Everywhere by Enabling the IP Transition*, Reply Comments of Geoffrey A. Manne, Matthew Starr, Berin Szoka and Larry Downes, IN THE MATTER OF THE TECHNOLOGICAL TRANSITION OF THE NATION’S COMMUNICATIONS INFRASTRUCTURE, GN Docket No 12-353, (Filed on Feb. 25, 2013), available at <http://apps.fcc.gov/ecfs/document/view?id=7022125022>.

⁸Communications Act of 1934, 47 USC §151 *et. seq.* (1934).

⁹Larry Downes, Larry Downes, *Telcos Race Toward an all-IP Future*, CNET NEWS.COM, Jan 8, 2013, available at http://ces.cnet.com/8301-34435_1-57562644/telcos-race-toward-an-all-ip-future/.

That superior design has created an enormous black hole for PSTN network operators. As fewer customers subscribe to wireline services, the cost of maintaining aging copper and analog switches is increasing dramatically, both in absolute terms and on a per-customer basis. As much as 50 percent of current wireline expenditures go toward maintenance. By comparison, the operating expenses of native IP networks can be as much as 90 percent less than for PSTN.¹⁰

To their credit, the incumbent providers are trying to retire and replace what had been, until recently, their most valuable assets. Both Verizon and AT&T have spent billions accelerating the replacement of copper with fiber, and circuit-switched with packet-switched equipment.

But turning off the old network isn't as simple as it sounds. By law, carriers cannot retire the switched network without Federal and perhaps state regulatory approval, even if superior alternatives are in place. And the FCC and state regulators have balked at giving permission for the switchover, calling for more study on proposed trials for PSTN to IP switchovers in test markets.¹¹

The longer the carriers are required to spend money maintaining the obsolete networks, however, the less capital budget is available to accelerate the replacement of aging and obsolete equipment with better and cheaper IP technologies, including fiber optics, digital switches, and upgrades to straining cellular networks.

In the end, the real victims of the regulatory logjam are the remaining wireline customers who are also, not surprisingly, the ones least likely to be benefiting from Internet services. The customer segments that are farthest behind in broadband adoption, according to FCC data, are those most likely to be relying on switched telephone networks as their only form of communication access.¹² These include rural users, seniors, and low-income customers.

Getting these communities onto IP networks sooner rather than later eliminates the need for expensive duplication of the obsolete switched infrastructure. It will also make it easier and less expensive for them to connect to other broadband services including video and Internet access.

In that sense, allowing the carriers to accelerate the transition to IP would overcome many of the obstacles that keep 20 percent of American adults from joining the Internet. According to the Pew Internet Project, almost half of that group cite as their primary reason not to connect a lack of relevance to their needs, rather than cost.¹³ With IP-based telephony in place, however, the relevance for employment, education, health care, family life, entertainment and commerce would be far easier to communicate.

For Congress and the FCC, this is the moment of truth. The IP Transition is gaining speed, and its ultimate completion is inevitable. But even inevitable advances in technological progress can be delayed significantly by over-regulation, denying some consumers the full benefits of the Internet ecosystem.

The FCC has an unavoidable role to play in the process. As communications markets are being simultaneously destroyed and recreated, regulations designed to dull the sharper edges of once-static and siloed technologies are now, as the agency recognizes, posing the very real danger of unintentionally holding back the progress of innovation. The agency must unravel itself from its complicated relationships with the affected industries, and quickly.

To begin with, the FCC should expeditiously grant pending petitions for trials to switchover PSTN networks to native IP. And, while the trials are underway, the FCC should use begin planning a pro-transition agenda that can be enacted swiftly upon successful completion of the trials—or modified as necessary to adjust for any lessons learned.

Specifically, Congress and the FCC should:

1. Clearly define the IP Transition as a central Federal policy objective and make clear its intentions that VoIP be left unregulated.
2. The FCC should preempt state regulators' efforts to preserve PSTN networks beyond their useful lives to the long-term detriment of ratepayers.

¹⁰*Id.* See also Larry Downes, *AT&T Moves Dramatically Towards "Internet Everywhere,"* FORBES, Nov. 8, 2012, available at <http://www.forbes.com/sites/larrydownes/2012/11/08/att-moves-dramatically-towards-internet-everywhere/>.

¹¹Larry Downes, *FCC Again Balks on Telephone Network Shutdown*, CNET NEWS.COM, May 14, 2013, available at http://news.cnet.com/8301-1023_3-57584306-93/fcc-again-balks-on-telephone-network-shutdown/.

¹²FCC, *Eighth Broadband Progress Report*, GN Docket 11–121 (Aug 21, 2012), ¶ 122 at p. 54, available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-12-90A1.pdf.

¹³Pew Internet and American Life Project, *Digital Differences*, April 13, 2012, available at <http://pewinternet.org/Reports/2012/Digital-differences/Main-Report/Internet-adoption-over-time.aspx>.

3. Plan and set a date certain for PSTN retirement, based on lessons learned in the successful transition from analog to digital television.
4. Retire legacy Federal regulations that are unintentionally slowing the transition to all-IP infrastructure and retarding the adoption of broadband, especially among rural and low-income populations.
5. Make clear that Title II regulations will never apply to IP networks.
6. Refrain from asserting Title I ancillary authority to impose mandated interconnection requirements on IP networks, and instead leave interconnection in the hands of the private parties exchanging the traffic.

There has been some progress in achieving these objectives, albeit slow. The National Broadband Plan, in particular, showed vision in urging the Commission to move immediately to accelerate the transition away from circuit-switched networks to native IP.¹⁴ As the Plan noted, “[r]egulations require certain carriers to maintain [legacy TDM networks]—a requirement that is not sustainable—and lead to investments in assets that could be stranded.”¹⁵

In creating the Technology Transitions Policy Task Force, the FCC likewise took an important step to encourage the rapid transition “from special purpose to general purpose, from circuit-switched to packet-switched, and from copper to fiber and wireless-based networks.”¹⁶ Then-Chairman Genachowski noted at the time:

Technological transitions don’t change the basic mission of the FCC. But technology changes can drive changes in markets and competition. And many of the Commission’s existing rules draw technology-based distinctions. So the ongoing changes in our Nation’s communications networks require a hard look at many rules that were written for a different technological and market landscape.¹⁷

The point of these farsighted statements is both clear and accurate: Regulators should not pick winners and losers in the broadband ecosystem. But that truism does not mean the Commission should not take action to advance new technologies that are clearly superior.¹⁸ IP networks, in design and implementation, are in every relevant measure exponentially better than PSTN. Lawmakers and regulators should continue to hasten their adoption, focus on making the transition as smooth as possible for all consumers and refrain from placing regulatory impediments in the way of their success.

Some critics of proposed IP transition trials have argued for the continued application of existing regulations (particularly interconnection mandates under Sections 251 and 252 of the Communications Act), arguing that these provisions should apply in a “technology neutral” fashion.¹⁹

According to these critics, “the policy justifications for requiring ILECs to provide interconnection and to submit to arbitration—namely, the ubiquity of ILECs’ telecommunications networks and market power that these pervasive networks confer—arise regardless of the technology used by those networks to transmit and exchange telecommunications traffic.”²⁰

Not only are these complaints irrelevant to the proposed trials (which are small steps aimed at determining precisely *whether* constraints such as Sections 251 and 252 are appropriate), but their alleged policy justification is not, in fact, “technology neutral.” Instead, it is a call to apply barnacled rules, crafted over decades specifically for the technology and business realities of the PSTN, to a new ecosystem that shares few, if any, of the same characteristics.

¹⁴ See *Connecting America: The National Broadband Plan*, §4.5 at p. 59 (2010) (“National Broadband Plan”), available at <http://download.broadband.gov/plan/national-broadband-plan.pdf>.

¹⁵ *Id.*

¹⁶ FCC, *FCC Chairman Announces Formation of “Technology Transitions Policy Task Force”*, (Dec. 10, 2012), <http://www.fcc.gov/document/fcc-chairman-announces-technology-transitions-policy-task-force>.

¹⁷ *Id.*

¹⁸ In nearly every government provision of spectrum in the last hundred years, Congress has clearly picked what it felt were “better” technologies and used policy levers to promote their adoption. Similarly, by excluding broadband Internet access from Title II regulations in the 1996 Communications Act, Congress affirmatively and wisely promoted an unregulated market for IP-based services, and mandated the FCC to do the same. See, e.g., Communications Act of 1996, 47 U.S.C. §§ 153(24), 230, 706 (1996). See also *NCTA v. Brand X Internet Services*, 545 U.S. 967 (2005).

¹⁹ See, e.g., Comments of Competitive Carriers Association, *In re AT&T Petition*, GN Docket No. 12-353 (Filed Jan. 28, 2013), available at <http://apps.fcc.gov/ecfs/document/view?id=7022113646>.

²⁰ *Id.* at 3.

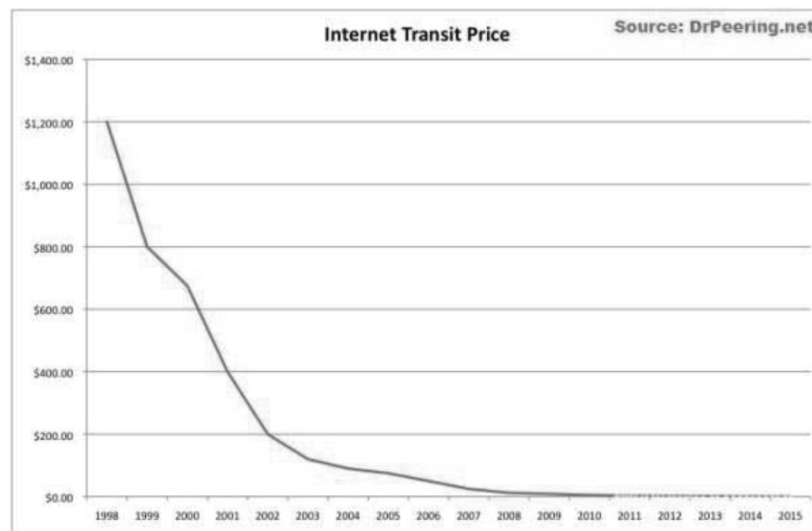
Technology neutrality does not mean blindly enforcing design principles suited for tree houses as buildings codes for steel skyscrapers. Modern structures are clearly better. They require entirely different rules, and different kinds of enforcement. Applying PSTN rules to IP networks is bad business and bad public policy. There are no regulated monopolies in the IP ecosystem, and no need for the kind of regulations aimed at controlling them.

An all-IP-infrastructure is clearly better for everyone. The sooner we can complete the transition, the sooner we will reap the full dividends of continuing private and public investments in this new infrastructure. Getting the transition right will not only save the legacy PSTN operators from irrelevance. It will likely bolster the U.S. economy, accelerate the technological empowerment of Americans as both citizens and consumers, and sustain global competitiveness for U.S. technology companies. As the National Broadband Plan put it,

[B]roadband is a foundation for economic growth, job creation, global competitiveness and a better way of life. It is enabling entire new industries and unlocking vast new possibilities for existing ones. It is changing how we educate children, deliver health care, manage energy, ensure public safety, engage government, and access, organize, and disseminate knowledge.²¹

In *The Politics of Abundance*, former FCC Chairman Reed Hundt and his one-time chief of staff Blair Levin make a persuasive case that the shift to “connected computing”—broadband Internet, cloud-based services, and widespread mobile devices—is essential to jumpstart the U.S. economy. Hundt and Levin urge all levels of government to take immediate steps to support what they call the “knowledge platform”—ultra high-speed broadband with high reliability and low latency, able to support high-bandwidth, video-intensive applications and cloud-based services.

As Hundt and Levin write, “[t]o increase growth, job creation, productivity gains, and exports at a faster rate, government should double down on what is already doubling in the Internet sector.”²² They point, for example, to the fact that Internet transit prices have improved as much as 50 percent each year. (See Figure 1)



Source: Hundt & Levin, *supra* note 22, Figure 2.1, p. 105

Figure 1—Internet Transit Price per 1 Mbps, 1998–2015

The kind of high-speed, widely accessible and affordable broadband Hundt and Levin describe also provides the tools that innovators need to launch more Big Bang

²¹ National Broadband Plan, *supra* note 14, at xi. See also chapters 10–16. And see Robert E. Litan and Hal Singer, *THE NEED FOR SPEED: A NEW FRAMEWORK FOR TELECOMMUNICATIONS POLICY IN THE 21ST CENTURY* (Brookings Institution Press 2013).

²² Reed Hundt & Blair Levin, *THE POLITICS OF ABUNDANCE: HOW TECHNOLOGY CAN FIX THE BUDGET, REVIVE THE AMERICAN DREAM, AND ESTABLISH OBAMA'S LEGACY* 9 (2012), 16–17.

Disruptions. All-IP networks will vastly expand the possibilities of the next generation of cloud services like Google, Facebook, Twitter and Salesforce. These services and others that will follow will be superior in ways both easily imaginable (instant, more reliable interaction with richer media like video, streaming presentations, and more robust tools) but also in ways that we cannot yet imagine.

Preserving Peer-Based Interconnection

The IP Transition will accelerate the ongoing transformation of our digital experiences in ways that could be as revolutionary as the introduction of the Internet itself. It is imperative that government, private sector companies, and consumers work together to get it done as quickly as possible.

Government, in particular, should work to undo much of the regulatory mess that unnecessarily constrains legacy PSTN providers as they transition to IP. For example, Congress and the FCC should reject self-serving calls to impose outdated regulations mandated network interconnection, devised for an era of monopoly voice carriage, on the well-functioning market for private Internet peering agreements, which already ably provides for voice as well as video and data traffic management.

Private peering arrangements have long provided an efficient mechanism for interconnection on packet-switched networks, regardless of whether the packets contain data, video, and voice applications. The shutdown of PSTN networks and the migration of additional voice traffic to the Internet do not change the dynamics of that system. As Michael Kende, former Director of Internet Policy Analysis at the FCC has recently written:

[T]he competitive concerns that historically drove interconnection regulations for PSTN-based voice service are no longer valid due to the rapid take-up of many different types of alternative communications services to traditional voice, such as cable telephony, software-based voice over IP (VoIP), and other IP-based forms of communications. Therefore, as voice migrates to the Internet there is no need for any regulation of IP voice traffic which mirrors the regulation of the PSTN on competition grounds, because the current IP interconnection arrangements show how traffic will flow end-to-end without a regulatory mandate.²³

Today, marketplace and reputational incentives drive interconnection and consumer protections. These incentives are buttressed by various multistakeholder processes that continue to evolve to supplement direct company-to-company dispute resolution.²⁴ At the same time, the FCC retains authority under Title I of the Communications Act to regulate for public safety, and antitrust and consumer protection laws govern IP services precisely because they are not regulated as common carriers (which are excluded from the FTC's general jurisdiction over the economy).²⁵

If significant issues do arise in the IP transition that escape these multiple layers of regulatory and governance constraints, Congress can of course enact legislation appropriately targeted to address clear consumer harms. But narrowly tailored legislation from Congress after the IP transition has evolved of its own accord is the proper mechanism for addressing such issues—not by bringing the dead weight of old regulatory baggage to new markets.

Not surprisingly, several parties in the FCC's on-going IP transition proceedings have urged the agency to transplant legacy interconnection requirements on IP networks as part of the retirement of the PSTN. PSTN interconnection requirements, however, were formulated when the Bell System was a true, regulated monopoly. They were a necessary evil to control monopolistic risks, and they have imposed considerable waste, fraud and unnecessary cost in exchange for that benefit. Consider, for example, recent FCC reforms of intercarrier compensation aimed at reducing

²³Michael Kende, *Voice Traffic Exchange in an IP World*, Analyses Mason, April 12, 2013, at 2.

²⁴Most notable among these is the Broadband Internet Technical Advisory Group (BITAG), “a technical advisory group to discuss and opine on technical issues pertaining to the operation of the Internet, as a means of bringing transparency and clarity to network management processes as well as the interaction among networks, applications, devices and content.” BITAG History, http://www.bitag.org/bitag_organization.php?action=history (last visited February 25, 2013).

²⁵See Federal Trade Commission, *Broadband Connectivity Competition Policy*, 3 (2007), available at <http://www.ftc.gov/reports/broadband/v070000report.pdf> (“[FTC] jurisdiction [over broadband Internet access services] had once been regarded as limited to the extent that the FTC's general enforcement authority under the FTC Act did not extend to entities that were ‘common carriers’ under the Communications Act. The regulatory and judicial decisions at issue, however, confirmed that the larger categories of broadband Internet access services, as information services, are not exempt from FTC enforcement of the FTC Act.”).

such interconnection arbitrage as traffic pumping, phantom traffic and other abuses.²⁶

In the IP world, by contrast, network operators worldwide negotiate all manner of peering agreements absent any regulation. Indeed, peering within the IP network is so easily achieved, as the OECD has pointed out, that “the terms and conditions of the Internet interconnection model are so generally agreed upon that 99.5 percent of interconnection agreements are concluded without a written contract.”²⁷ Simply put, there is no evidence that anything is broken in the IP network ecosystem.

Those asking regulators to invent an IP interconnection regulatory scheme for voice (or perhaps for all Internet traffic) invoke public interest concerns, but the real motivation is simple rent-seeking. Smaller carriers prefer below-market rates for backhaul, and CLECs are eager to protect their subsidized business model in new ecosystems that are already highly competitive. But these desires have nothing to do with consumer harms, let alone the public interest. In any case, the FCC should avoid “prophylactic” regulations for interconnection problems that, as even those asking for them admit, are speculative.

That Internet peering works so well absent regulation is no surprise. Major ISPs have strong business incentives to interconnect. For example, ISP customers increasingly demand access to streaming video content from services such as Netflix and Amazon, and ISPs know that streaming video is the primary reason that customers are willing to pay for high-speed broadband connections at home.

Where disputes have arisen (often around the distinction between settlement-free transit vendors and paid-peering content delivery networks (CDN), for example²⁸), they have taken the form of contract disputes between large commercial players over the *specific terms* of interconnection, not *whether* it will be available.

Moreover, demand for streaming video has become so strong that Netflix, having established its own CDN, can now sidestep such disputes and pressure ISPs to accede to its peering demands by threatening to withhold new content or services. It has now *content providers*, in other words, and not ISPs, who threaten to withhold traffic.²⁹ The newfound market power of content providers—as well as increasing intermodal competition from mobile broadband—upends the weathered assumption that ISPs hold all of the bargaining power in interconnection negotiations.

Lessons from the Digital Television Transition

In encouraging the rapid transition of wireline providers to all-IP networks, Congress should heed the lessons of the earlier transition from analog to digital television (DTV). The DTV experience underscores the importance of accelerating deregulation of obsolete networks before consumers abandon them, of setting and sticking to a date certain, and to avoiding the temptation to prophylactically regulate for consumer harms that have yet to appear.

At its height in the 1970s, 93 percent of all American homes relied on antennas. But analog broadcast couldn’t compete with the quality or the quantity of cable channels. As digital technology expanded the scope and efficiency of cable and later fiber-based programming, it became clear that over-the-air broadcasters would likewise need to convert to digital signals to compete.

Shutting down analog broadcast, however, required government coordination. In 1996, Congress mandated the conversion from analog to digital broadcast in 1996, setting a deadline of 2006 and authorizing the FCC to coordinate the transition.

The coordinated switch to DTV was intended to make the highly-regulated broadcasters more competitive with the relatively unregulated cable industry.

²⁶ Report and Order and Further Notice of Proposed Rulemaking, *In re Developing a Unified Inter-carrier Compensation Regime*, CC Docket No. 01–92 (November 18, 2011), available at <http://www.fcc.gov/document/fcc-releases-connect-america-fund-order-reforms-usfcc-broadband>.

²⁷ OECD, Committee for Information, Computer and Information Policy, Internet Traffic Exchange: Market Developments and Policy Changes, 3 (June, 2011), available at [http://search.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DSTI/ICCP/CISP\(2011\)2/FINAL&docLanguage=En](http://search.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DSTI/ICCP/CISP(2011)2/FINAL&docLanguage=En).

²⁸ See, e.g., Marguerite Reardon, *Understanding the Level 3-Comcast spat (FAQ)*, C-Net (November 30, 2010), available at http://news.cnet.com/8301-30686_3-20024197-266.html.

²⁹ See, e.g., Betsy Isaacson, *Netflix Says 3D and ‘Super-HD’ Movies Are Just Around The Corner—But Only For Some Customers*, Huffington Post (January 9, 2013), available at http://www.huffingtonpost.com/2013/01/09/netflix-3d-movies_n_2441394.html; Fred Campbell, *Netflix Blocking Internet Access to HD Movies*, The Technology Liberation Front (January 17, 2013), available at <http://techliberation.com/2013/01/17/netflix-blocking-internet-access-to-hd-movies/>; Fred Campbell, *What Does Netflix’s Decision to Block Internet Content Tell Us About Internet Policy?*, The Technology Liberation Front (January 23, 2013), available at <http://techliberation.com/2013/01/23/what-does-netflixs-decision-to-block-internet-content-tell-us-about-internet-policy/>.

How? Digital TV lowered costs and created new opportunities for broadcasters. As part of the transition, for example, broadcasters traded their analog radio spectrum allocations in the 700 MHz band for a new 6 MHz block in the 600 MHz band. Because digital signals are more compressed, each 6 MHz block could be split and used for multiple channels, all of them capable of high-definition broadcast, as well as new mobile business opportunities for the broadcasters.

So far, however, few station operators have been able to make use of that capacity to offer extra channels or to repurpose underutilized spectrum for mobile or other premium services. That's largely because, in the end, the DTV transition was delayed until 2009. By then, over-the-air television had already entered an unrecoverable dive in viewership and revenue.³⁰ According to research from the Consumer Electronics Association, the decline in over-the-air audience became irreversible between 2005, when the transition should have happened, and 2009, when it finally did.³¹

Delays in the DTV transition were largely the result of unfounded and exaggerated fears that some consumers would not be ready in time. A 2006 article in *Fortune*, for example, warned breathlessly that the DTV transition would “render about 70 million TV sets obsolete,” and that “for consumers with one of those 70 million sets—many of whom are likely to be poor, elderly or uneducated, being forcibly switched from one technology to another will be a nightmare.”³²

The reality, of course, was very different. Consumers who weren't already cable or satellite subscribers and whose energy-inefficient tube television sets were too old to receive digital signals were barely inconvenienced, let alone “forcibly switched.”

Many had already moved to cable or satellite by the time the DTV transition occurred. For the rest, all they had to do was to buy and attach small digital converter boxes to their old TVs. Under a plan implemented by the Department of Commerce, consumers could even apply for up to two \$40 coupons with which to purchase the converters, funded by proceeds from the 700 MHz spectrum auctions.

On the fateful day, June 12, 2009, according to Nielsen, almost no one was left without television service. As Figure 2 shows, nearly all “unready homes” had successfully made the transition by using the converter box, or by switching to digital cable or satellite. No television was rendered “obsolete,” let alone 70 million.³³

³⁰ See Sam Schechner and Rebecca Dana, *Local TV Stations Facing a Fuzzy Future*, THE WALL STREET JOURNAL, Feb. 10, 2009, available at <http://online.wsj.com/article/SB123422910357065971.html>.

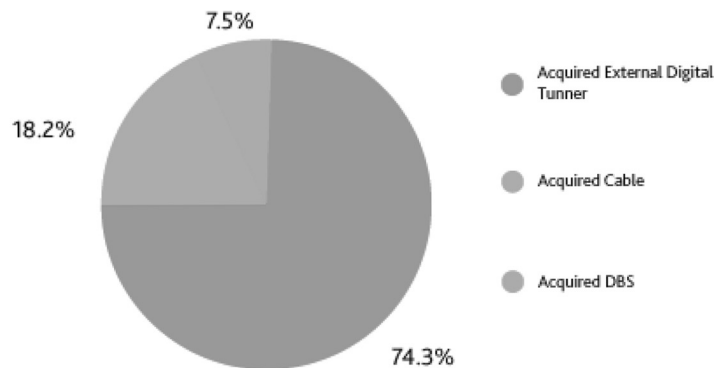
³¹ CEA Study: Consumers are Tuning Out Over-the-Air TV, May 31, 2011, available at <http://www.ce.org/News/News-Releases/Press-Releases/2011-Press-Releases/20110531-CEA-Study-Consumers-Are-Tuning-Out-Over-t.aspx>.

³² Marc Gunther, *Digital TV: Leaving Viewers in Limbo*, FORTUNE, Jan. 19, 2006, available at http://money.cnn.com/2006/01/04/technology/pluggedin_digitaltv/index.htm.

³³ Nielsen, *The Switch from Analog to Digital TV*, Nov. 2, 2009, available at <http://www.nielsen.com/us/en/newswire/2009/the-switch-from-analog-to-digital-tv.html>.

The Transitioned Television Set Route to Readiness – Total U.S.

Percent of Converters June 21, 2009



Source: The Nielsen Company

Figure 2—Consumers Adapted to the DTV Conversion

Delaying the transition by three years, however, blunted the potential of a coordinated and timely switchover in crucial ways. Consumers had more time to switch to cable or satellite to avoid dealing with the transition at all, imposing real damage on broadcasters. That loss of viewers makes it harder to this day for the broadcasters to offer new and competing products using their new spectrum and digital technology upgrades.

Ultimately, that translates to a loss to consumer of more competition in the video marketplace. Delays that were intended to protect consumers, in the end, did just the opposite.

The IP transition should be easier. Unlike digital television, consumers will not need to replace equipment already in their homes, nor will they need to install adapters for existing telephones. In some cases, fiber optic cable will replace copper wiring in the heart of the network; in other cases, fiber will be run directly to the home. But inside wiring will not be affected, and existing telephones (far cheaper to replace, in any case, than old analog televisions) will continue to operate, just as they do now in homes that have already switched to Internet voice services.

It is true that some rural users may need to switch from landline to mobile service, especially in remote areas where the cost of installing wired IP networks is prohibitive. But the FCC can subsidize the cost of that switch—as indeed it already does through the recently-reformed Universal Service Fund.³⁴

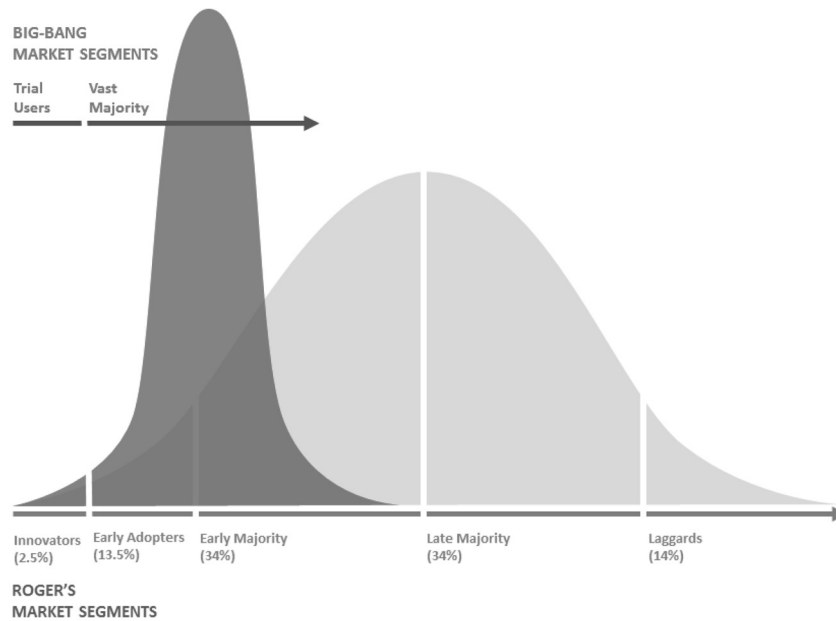
As with DTV transition, however, ungrounded fears of what could go wrong could continue to delay the IP transition, with dangerous and unintended consequences for consumers—particularly those for whom advocates most claim to be looking out.

Conclusion

Consumers naturally resist change, even when being offered new products and services that are better and cheaper. But where the introduction of new technologies once required careful planning by providers and different marketing delivered to different groups of users, research on Big Bang Disruptions reveals that the process

³⁴See Marguerite Reardon, *FCC Reforms Phone Subsidy Program for the Poor*, CNET NEWS.COM, Jan. 31, 2013, available at http://news.cnet.com/8301-30686_3-57369007-266/fcc-reforms-phone-subsidy-program-for-the-poor/.

has changed dramatically. The old bell curve model of technology adoption first described by Everett Rogers is gone, replaced by a much steeper curve in which adoption is nearly universal and immediate. The Internet revolution has compressed the old categories to just two: early users, and everyone else.³⁵ (See Figure 3.)



(Source: Downes and Nunes, *supra* note 4, at 47)

Figure 3—The New Model of Technology Adoption

The adoption of IP-based voice services is following the new model, and its impact on wireline competition has already been devastating. Congress and the FCC must act to preserve the residual value of the PSTN and ease the transition for those Americans who have yet to make the leap.

Some consumers will no doubt encounter problems in the final transition from PSTN networks. Some of these issues will be addressed by more technology or, where truly necessary, by regulatory intervention. But as with the DTV transition, the real problems will likely turn out to be far less imposing, and visited on far fewer consumers, than pre-transition anxiety suggests. That of course is the reason to conduct trials in the first place: to unearth and resolve as many potential issues as possible, and to make clear where problems do not in fact exist.

In the DTV transition, broadcasters set free too late to make use of their new competitive technologies are now limping into extinction.

If we don't get the IP transition right, the same fate could be unnecessarily visited on incumbent PSTN network operators. But in the end, as before, it will be consumers who pay the price for that failure.

Senator PRYOR. Thank you.

Ms. Sohn?

**STATEMENT OF GIGI B. SOHN, PRESIDENT AND CEO,
PUBLIC KNOWLEDGE**

Ms. SOHN. Chairman Pryor, Ranking Member Wicker, members of the Subcommittee, thank you for inviting me to give the public interest perspective on the IP transition.

³⁵ See Downes and Nunes, *Big Bang Disruption*, *supra* note 4, at 47.

The transition of our wireline networks to Internet Protocol-based services is a tremendous opportunity for our nation, but we must make sure the transition results in actual upgrade in technology without a downgrade in the services upon which Americans depend.

For decades, our country has used reasonable rules based on fundamental principles to build a phone network that became the envy of the world. We are the country that brought a phone to every farm, the country that built a network you can count on. We accomplished this by moving certain fundamental values with us as our networks evolved. As we now face the opportunities and challenges of implementing the next generation of communications technology, we must continue to leave no one behind.

Americans are so used to relying on the protections of the phone network that they often do not even notice them. We conduct our business and personal communications as if they can always trust that the phone network will just work because it has. We can choose to use whatever phone we want. When the power goes out during a natural disaster, our phones will keep working. During emergencies, we can always call for help from police, fire fighters, and hospitals. When someone calls a friend on another phone network, that call will always go through regardless of which carriers they subscribe to or where they live. When the bill comes for that call, the user can rest assured that there will be no fraudulent charges and the carrier will not have traded her to another carrier without her permission. If a user changes phone companies, she can keep her phone number. In the rare instance that any part of the system breaks down, government authorities at the local, State, and Federal levels move swiftly to act as if our lives depended on it because they do.

Every one of these benefits is the result of deliberate policy choices that serve specific basic values. Our phone network became the envy of the world because our policymakers valued what Public Knowledge calls the five fundamental principles: one, service to all Americans; two, competition and interconnection; three, consumer protection; four, network reliability; and five, public safety. These values are no less relevant and, if anything, are even more important as we begin the transition to IP networks.

There are some who believe that the IP transition should be a glide path to eliminating FCC oversight. But as carriers begin the transition, we have concrete examples that many of the essential services we take for granted are at risk in rural and not-so-rural areas for individuals and for small businesses.

One of the worst problems, as Shirley Bloomfield mentioned, is the continuing inability of rural residents to receive telephone reliably. As carriers switch to IP technology, they can route calls through least-cost router systems, creating latency, and sometimes trapping calls in perpetual loops so calls do not go through. In a world where we simply allow the marketplace to work, this does not get fixed. As one carrier told a complaining subscriber—and I quote—due to living in a rural area, you will experience service issues. That was the response.

In Hurricane Sandy-ravaged Fire Island, just 60 miles from Manhattan, Verizon has replaced their damaged copper network with

Voice Link wireless service. Hundreds of residents, many of them elderly, have complained to the New York Public Service Commission. For example, Dr. Samuel Mann complained that he cannot reliably receive emergency calls from his hospital. Jean Ufer writes that her husband's pacemaker cannot be monitored via Voice Link. And Mr. and Mrs. Howard Bedell are concerned that their father cannot use Voice Link for his Life Alert. Jonathan Randazzo, who owns five restaurants and businesses on Fire Island, had his credit card machine stop working on a recent Saturday evening. According to the "Washington Post," Randazzo hopped from table to table scribbling credit card numbers and asking for signatures.

Now, this could happen to any community that has ever experienced a natural disaster strong enough to damage network lines.

Before you or in back of you or in back of me is a chart of services supported by Verizon's copper network that are not supported by Voice Link: reliable 911, medical alerts, security systems, broadband access, just to name a few.

Members of the Subcommittee, these are not luxuries. These are necessities, and in many cases they are a matter of life or death.

This is why we need rules of the road to govern the transition and beyond not because Verizon is a bad actor. They are not. But because problems will inevitably arise as old systems fade and new ones arise. Even at this early stage, carriers have shown that they will not voluntarily defend the fundamental principles that have made our networks great.

The IP transition is an appropriate time for policymakers to review and update the rules for new technologies and ensure our communications policy continues to put everyday Americans first.

But the question is not whether simply old rules apply to new networks. The question is whether we continue to believe in the same basic American values that have governed the relationship between our society and our communications networks for over a century.

Thank you and I look forward to your questions.

[The prepared statement of Ms. Sohn follows:]

PREPARED STATEMENT OF GIGI B. SOHN, PRESIDENT AND CEO, PUBLIC KNOWLEDGE

Chairman Pryor, Ranking Member Wicker, and members of the Subcommittee, thank you for this opportunity to discuss the state of our nation's wireline communications networks. My name is Gigi Sohn and I am the President and CEO of Public Knowledge, a nonprofit public interest organization that promotes the public's access to information and culture through open, competitive, and universally accessible and affordable communications networks.¹

Introduction

The transition of our wireline networks to Internet Protocol (IP)-based services is a tremendous opportunity for our nation, but we must make sure the transition results in an actual upgrade in technology without a downgrade in the services upon which Americans depend. Right now we are in the midst of the transition: carriers are already actively moving their networks from the traditional Time-Division Multiplexing (TDM) protocol to IP-based technology. At the same time, we are seeing carriers show increasing interest in replacing their copper infrastructure with wireless service or with fiber for portions of their networks, often depending on the density and average income of each particular market.

¹I would like to thank my Public Knowledge colleagues Jodie Griffin, Christopher Lewis, Harold Feld, Clarissa Ramon, and Girard Kelly for assisting me with the research and drafting of this testimony.

For decades, our country has used reasonable rules based on fundamental principles to build a phone network that became the envy of the world. We are the country that brought a phone to every farm—the country that built a network you can count on. We accomplished this by moving certain fundamental values forward with us as our communications networks evolved since the founding of our country. As we now face the opportunities and challenges of implementing the next generation of communications technology, we must continue to leave no one behind.

For decades, the phone network in the U.S. has quietly and reliably provided benefits to the American public. These benefits have become so firmly engrained in the U.S. economy, public safety systems, and personal communications that users take for granted the consumer protections and competition policies that make them possible. These benefits were not a happy accident—they were the result of deliberate communications policies that demanded a telecommunications network that served its users first and foremost.

Just listing a few of the things we love about our phone network reveals how we are so used to relying on the protections of the phone network we often don't even notice them. We conduct our business and personal communications as if we can always trust that the phone network will just work—because it will. We can choose to use whatever phone we want. When the power goes out during a natural disaster, our phones—and the central offices that service them—will keep working. In times of emergency, we can always call for aid from police, firefighters, and medical teams. When someone calls a friend on another phone network, that call will always go through—regardless of which carriers the two users subscribe to or where they each live. When the bill comes for that call, the user can rest assured that there will be no fraudulent charges and the carrier will not have “traded” her to another carrier without her permission. If a user changes phone companies, she can keep her phone number. We know that we can benefit from the innovations and features built on the phone network because it is an open platform: innovations like the internet, new handsets, calling cards, and collect calls. And in the rare instance that any part of this system breaks down, we know that there are government authorities at the local, state, and Federal levels equipped to fix the problem and protect users' interests.

Every single one of these benefits is the result of deliberate policy choices that served specific basic values. Our phone network became the unparalleled success we know today because our policymakers valued five fundamental principles: 1) service to all Americans; 2) competition and interconnection; 3) consumer protection; 4) network reliability; and 5) public safety.² These values are no less relevant and, if anything, are even more important as we begin the transition to the next iteration of our Nation's communications networks.

The transition of our phone network is happening now because there is already a business case for it. The fact that the carriers are already actively updating their networks now means we need not worry that our current rules are standing in the way of the transition, but this is still an appropriate time for policymakers to review and update the rules for new technologies and ensure our communications policy continues to put everyday Americans first. The technology we use to communicate may be changing, but our basic social goals and values remain the same.

The Transition to All-IP is A Good Thing, But It Must Be Handled Responsibly

The transition to newer technologies in our communications network presents a tremendous opportunity for better service, new features, and more efficiencies that can be passed on to consumers. This does not, however, in any way lessen the public's need for continued consumer protection and competition policies that have made our communications network such a success for the past 100 years. For this reason, Public Knowledge fully supports the phone network transition. But we must make sure this transition is a step forward, not a step backward, for everyday Americans.

In addition to new opportunities, the phone network transition presents risks that the new networks will lack important features that consumers have counted on for decades. This means that policymakers at all levels of government must ensure that the transition is handled responsibly and everyday Americans are not left worse off during or after the transition.

When users' ability to call 9-1-1, conduct business, or reach loved ones is at stake, we cannot afford to permit carriers to engage in self-help. This summer we have already witnessed what happens when carriers replace their traditional net-

²See Jodie Griffin and Harold Feld, *Five Fundamentals for the Phone Network Transition*, PUBLIC KNOWLEDGE (July 2013).

works with new technology without guidance from authorities. Verizon's deployment of its fixed wireless service, Voice Link, has deprived customers in Fire Island, New York of important network services without advance public notice or input. This cannot become the "new normal." We are in the midst of an important transition, but that does not mean we can let people be cut off from the services they count on.

The first step to preserving a communications network we can all depend on is establishing the basic values that will guide policymakers' approach to the transition going forward. We need a basic framework of values to evaluate the many proposals that have been put forward before federal, state, and local regulators regarding the phone network transition. After all, for policymakers to know how to respond to an idea they must first know what goals and values the idea is supposed to serve. In the case of the phone network transition, policymakers can guide the transition to IP by relying on the same fundamental principles that made our phone network the envy of the world.

The Transition Will Especially Impact Rural Americans and Small Businesses

The new pattern of carriers eager to replace existing networks with new, untested technologies after natural disasters or when wireline networks have simply been allowed to degrade will have especially strong consequences for rural Americans and small businesses. Rural areas depend on wireline services more than most, especially because wireless deployment—even beyond its general limitations compared to wireline service—is not very strong in rural areas. And when a rural community loses a wireline service provider that offered DSL or other broadband service, there is rarely any competing service to turn to for continued Internet access. At the very least, the rural farmers who grow our food should know that they will be able to make phone calls and access the Internet when needed to check weather patterns, predict crop growth, and make business arrangements to harvest and transport crops. This also impacts more than just rural communities themselves—when farmers are arranging food shipments to *your* town, do you want them to lose service?

The recent rural call completion problem also reminds us that rural communities may bear the brunt of unexpected complications tied to the IP transition, with potentially devastating consequences. As carriers switch to IP technology, it becomes possible for them to route calls through Least Cost Router systems, creating latency and sometimes trapping calls in perpetual loops so calls to or from rural areas do not go through. The Commission has rightly recognized that this issue speaks to our foundational expectation that the phone network will be reliable for all Americans, including those in rural areas, and has opened a proceeding to learn more about exactly why the rural call completion problem is getting worse.³ But even so, the FCC has received some shockingly inadequate carrier responses to rural call completion complaints. For example, one carrier told the FCC: "We have contacted the [rural complainant] and have successfully resolved this matter by advising [her] that due to living in a rural area she will experience service issues."⁴

This is why we need rules of the road: problems will inevitably arise as old systems fade away and new ones arise, but carriers have clearly shown that we cannot simply assume that companies will voluntarily defend the fundamental principles that have made our communications networks great. Meanwhile, 25 states have eliminated or reduced state commission authority over telecommunications services, and 12 states (all of which are in AT&T's incumbent local exchange carrier territory) have eliminated or reduced carrier of last resort obligations.⁵ Particularly where the states have effectively written themselves out of the conversation through deregulation, everyday Americans are relying on Federal authorities as their sole defender to protect the reliable, affordable communications access they count on.

The National Rural Assembly's Rural Broadband Tales⁶ reminds us how everyday rural Americans rely on communications networks to conduct business, pay their bills, and pursue education. If these communities see their Internet access replaced with voice-only fixed wireless services like Voice Link, or continue to lack adequate

³*Rural Call Completion*, Notice of Proposed Rulemaking, WC Docket No. 13-39 (rel. Feb. 7, 2013).

⁴FCC Enforcement Advisory, Rural Call Completion: Long Distance Providers Must Take Consumer Complaints About Rural Call Completion Problems Seriously (July 19, 2013), http://transition.fcc.gov/Daily_Releases/Daily_Business/2013/db0719/DA-13-1605A1.pdf.

⁵Sherry Lichtenberg, Ph.D., *Telecommunications Deregulation: Updating the Scorecard for 2013*, NATIONAL REGULATORY RESEARCH INSTITUTE, at 1, 20-22 (May 2013).

⁶*Rural Broadband Tales*, <http://placestories.com/project/7996#?v=stories>.

broadband access in the first place, we all miss a huge opportunity to develop our economy and connect our nation. Here are just a few of these stories:

- John Hicks, a coal miner from Perry County, Kentucky, explains that his Internet service drops around 300 to 400 times per month, leaving him unable to pay his bills and his children unable to do their homework.
- Joyce Dearstyne from Elk City, Idaho tells how, if she had access to broadband, she could “utilize e-commerce capabilities to promote artists in the woods and other value-added good products and create a level playing field for my businesses and artisans to compete throughout the world.”
- John Carwell, a minister from southeastern Kentucky suffers from (1) *no wireless service* and (2) *poor broadband service*. He explains, “[w]e feel helpless when we talk to the communication companies. We say we have the tower and land to put your services and equipment on . . . We’re helpless because the response is always ‘well there’s not enough people.’ That’s tough to hear because what they’re saying is ‘your area’s not worth it.’”

Similarly, small businesses—particularly those in areas with terrain inhospitable to wireless service—are vulnerable to losing necessary communications services if this transition is not handled responsibly. If a business’s wireline connection is replaced with a service like Voice Link that does not support Internet access or credit card processing, they risk going out of business entirely. If a restaurant cannot take your credit card because it only has a voice line, or its service was just dropped, you likely won’t be inclined to return. When a coffee shop can no longer offer WiFi because its Internet connection has been taken away, the fact that the shop might have an almost-as-reliable wireless voice-only service in its stead will be cold comfort as it watches paying customers walk out the door.

These are the risks faced by every area that faces potential natural disasters, every town that contains small businesses, and every community that wants this transition to be a step forward, not a step backward. This is why we must be diligent in shaping a phone network transition that creates new, better services protected by strong, certain rules.

A Cautionary Tale: Transitioning After Natural Disasters

It is clear that the continued success of our communications networks depends on reasoned rules and strong consumer protection during and after the phone network transition, and that need is even greater in communities likely to experience or already experiencing the transition, like rural areas and areas damaged by natural disasters. The examples we have already seen where carriers have transitioned communities to new networks on their own initiative warn us of what happens if policymakers do not step in to protect consumers. Without strong guidance, we all face the very real danger that the phone network transition will be a technological step backward and a downgrade in consumer protection.

Communities and their residents have always had to deal with temporary network outages after natural disasters, but now that we are in the midst of the phone network transition, we are seeing instances where carriers want to respond to damaged networks by replacing the existing networks with new, untested services, rather than repairing or rebuilding the infrastructure the community has relied on for decades. Like the rest of the phone network transition, this can be an opportunity for better, newer service for the community, but unfortunately we have already seen how it can also force customers—who are already trying to rebuild their lives after a devastating natural disaster—to accept less reliable, more restricted services than what they had before.

For example, after Hurricane Sandy damaged the existing copper network in communities on the East Coast, Verizon decided to replace its copper-based service with a fixed wireless service called Voice Link in certain areas. Voice Link works by connecting a device linked to Verizon’s wireless network to a customer’s house. It is now clear that Voice Link constitutes a substantial step backward for many of the permanent residents in Fire Island, New York, hundreds of whom have already complained to the New York Public Service Commission. As a wireless service, Voice Link does not offer the same reliability and quality of service that the copper did, and it requires the customer to remember to recharge or replace its batteries to function during a power outage. Verizon specifically disclaims liability if it negligently lets the wireless network become too congested for 9–1–1 calls to go through. And, unlike the copper network, Voice Link does not support important

features like Life Alert, other medical alerts, security alarms, Internet access, credit card processing, calling cards, and collect calls.⁷

Even a quick glance through the New York State Public Service Commission's public comments and press reports reveals how much these changes are impacting real customers' lives:

- R. Bruce Minoff, among many other customers, complains that wireless service in his family's area is spotty, so they now have no option at all for reliable phone service.
- Dr. Samuel J. Mann complains that he cannot reliably receive emergency calls from his hospital now, while other families, like Sonia Gluckman, are worried that they will not be able to reach a doctor if their elderly parents need urgent medical care.
- Mr. and Mrs. Howard Bedell express concern that their father cannot use Voice Link for Life Alert or to remotely connect pacemakers and other medical devices to their hospitals, as they previously could using Verizon's copper network.
- Customers—particularly small business owners like realtor Jean Ufer—report that they can no longer turn to uncapped DSL Internet access for approximately \$30 per month, and instead pay \$80 per month for just 10 GB of data on a 4G wireless connection. Even outside of the office, Ms. Ufer also noted that the switch to Voice Link has prevented her husband from having his pacemaker remotely monitored, as he used to over the copper line.
- Jonathan Randazzo, who owns five restaurants and businesses on Fire Island, had his credit card machine stop working on a recent Saturday evening. According to the *Washington Post*, Randazzo “hopped from table to table, scribbling credit card numbers and asking for signatures he created on a Word document printed out from his computer.”⁸

Every day more complaints come in; it is clear that customers of all backgrounds are outraged at having been switched to an inferior service with no prior public notice or input.⁹

Voice Link is one startling example, but the lessons are by no means limited to Verizon, Voice Link, or Fire Island. This could happen to any community that has ever experienced a hurricane, tornado, earthquake, blizzard, flood, or storm strong enough to damage network lines. We all have a stake in making sure policymakers protect the interests of everyday Americans, especially people trying to rebuild their communities after devastating natural disasters. Hurricane victims cannot become the de facto guinea pigs for the phone network transition—if we have pilot programs for new technologies, they must be transparent and carefully controlled to protect the communities testing the new technology.

The Transition Should Be Guided by the Five Fundamentals

As we move forward in the phone network transition, we need a basic framework to establish the fundamental values that undergird our communications networks and guide new policy proposals. Working within a values-based framework ensures that our 21st Century rules will benefit everyday Americans, not just the dominant corporations in the telecommunications industry.

Public Knowledge submits that this framework should consist of Five Fundamentals that have successfully steered communications policy for decades, and continue to protect consumers and encourage innovation today. These fundamental values—service to all Americans, competition and interconnection, consumer protection, network reliability, and public safety—capture the basic principles that made our phone network a resounding success and can do the same for the next generation of communications technology. The reality of tomorrow's network will depend on the expectations we set today and the values we commit to serving through the transition.

Service to All Americans

First and foremost, our national communications policy ensures the benefits of our communications network flow to *all* Americans—regardless of “race, color, religion,

⁷For a comparison of the capabilities of Voice Link and the previous copper-based telecommunications service, please see Appendix A.

⁸Cecilia Kang, *Verizon Pursues All-Wireless Phone Service in Seaside NY Town*, WASHINGTON POST (July 4, 2013), http://www.washingtonpost.com/business/technology/verizon-pursues-all-wireless-phone-service-in-seaside-ny-town/2013/07/04/9120fa80-ac4c-11e2-a198-99893f10d6dd_story_1.html.

⁹For more selected public comments submitted to the New York State Public Service Commission, please see Appendix B.

national origin, or sex.”¹⁰ We have, as a nation, decided to invest in a world-class communications infrastructure and so we should, as a nation, reap the benefits of that infrastructure. The principle of service to all Americans applies whether users live in rural areas or urban areas. It applies to those with any physical disability that would interfere with communication. It applies to all users regardless of their level of income. Today, our efforts to serve all Americans must include initiatives that go beyond traditional concepts of deployment and take advantage of the opportunities presented by new technologies.

Whatever happens, the United States must not be the first industrialized nation to step back from the goal of achieving 100 percent penetration of basic communications service. While the United States has not yet completely achieved the goal of 100 percent build-out, it is vital that reaching *everyone* in the country continues to be the goal motivating all stakeholders to continue working until the job is done.

This transition is also an opportunity to look forward: what new opportunities are made possible by new technology, and how does that impact what we determine to be the “basic service” that all should have access to? The Communications Act specifies that universal service encompasses “an evolving level of telecommunications services” and that the FCC should take into account “advances in telecommunications and information technologies and services” as it decides what universal service will look like for homes, schools, libraries, and health care providers across the country.¹¹ Access to basic communications services reaps tremendous social and economic benefits to users, regardless of the material or technology used to transport the communications.

It remains to be seen how the U.S. will continue to pursue the goal of 100 percent basic service for all Americans as carriers stop maintaining their older, TDM-based facilities. It is clear, however, that universal service and carrier of last resort policies must continue ensuring that all users are able to purchase reliable voice service under nondiscriminatory terms. These policies traditionally applied to all relevant carriers operating in some way on the traditional PSTN. Neither the make-up of the physical plant nor the protocols used to transport data on the network diminish consumers’ need for basic service—if anything, advances and new efficiencies in technologies may justify raising the standard for what is considered basic service.

One of the most important goals of communications policy in the United States is reaching universal service for all Americans across the country. The transition of the PSTN is an opportunity to expand and improve the communications service that all Americans receive, and our communications authorities must determine how they can continue to serve that goal as the traditional make-up of the PSTN changes.

Interconnection and Competition

Interconnection and other competition policies lie at the heart of the development of a robust and competitive communications network. As we saw more than 100 years ago, without mandatory interconnection the phone network will slide inevitably toward monopoly as the largest carriers can gain anticompetitive advantages by withholding access to their customers from competitors. As carriers now move toward all-IP networks, policymakers must determine how they will ensure interconnection and competition among providers post-transition. These policies are critical to creating and maintaining a functioning interconnected network and a competitive market for communications services.

The duty to interconnect with other networks was first a means of enabling universal service in rural areas in the days of the old AT&T monopoly so rural cooperatives, municipalities, and local businesses brought service to places AT&T found too expensive to serve. Later, as amendments to the Act shifted national policy from regulated “natural monopoly” to encouraging competition among competing networks, interconnection became the *sine qua non* of fostering and developing competition. Unless we propose to return to the days of regulated natural monopoly, policymakers must absolutely guarantee that competing networks will continue to accept each other’s traffic and terminate each other’s calls in a manner that both preserves call quality throughout the country and actively promotes a robust and competitive environment.

In particular, subscribers to different networks must not find themselves with dropped calls or degraded quality of service due to “peering disputes” between carriers. If NBC and AT&T have a retransmission dispute and AT&T video subscribers temporarily lose NBC programs, it is annoying. But if Comcast and AT&T have a “peering dispute” and millions of AT&T wireless customers cannot call Comcast

¹⁰ 47 U.S.C. § 151.

¹¹ 47 U.S.C. § 254(c).

landlines, it is a disaster. It is not enough to speculate that incentives will prevent such a thing from occurring. Policymakers must make sure such an event continues to be *impossible* after the transition.

It is not just idle speculation to imagine this happening in a post-transition PSTN. Already, some carriers are refusing to file IP-to-IP interconnection agreements at the state level. Without adequate interconnection requirements, consumers may find themselves suffering from interconnection disputes between carriers that provide not just their video and Internet access, but their basic voice service as well. If the interconnections that have tied together our voice network unravel, dominant service providers will be able to leverage their customer bases against competitors and control increasingly large shares of the market, resulting in higher prices and fewer choices for consumers.

Interconnection and competition policy also require an examination of potential reform in call termination and access charges. Even now, rate-of-return carriers that serve rural areas have reported increasingly poor phone service quality and increasingly frequent customer complaints. This quality decay prevents small businesses from offering prompt service, threatens to hinder emergency calls to or from public safety officials, and thwarts customers' efforts to communicate with loved ones. These complaints should be taken as a warning of things to come if interconnection requirements are not adequately implemented and enforced in the post-transition PSTN.

The phone network transition also calls into question the future of other rules and policies designed to encourage competition among communications providers. For example, local number portability (LNP) obligations have currently been extended to VoIP providers so that VoIP customers may keep their North American Numbering Plan (NANP) telephone number when changing providers. LNP rules encourage competition by allowing consumers to respond to providers' price and service changes without losing their phone numbers. But at this juncture the questions inevitably arises: when the traditional PSTN is gone, what will happen to the NANP? How can LNP rules extend to all phone service providers without revisiting the foundation of the NANP or classifying VoIP service?

Additionally, to preserve a competitive environment in wireline, the law must provide certainty that businesses and competing carriers will be able to obtain special access services at reasonable rates. If a carrier desires to exit a market completely, Congress must ensure that consumers are not left behind by protecting the right of local communities and governments to provision their own communications services.

As the PSTN transitions to new physical facilities and IP protocols, it is critical to the competitive future of the market that the law and rules ensure carriers will continue to interconnect and rules will continue to promote competition in the marketplace to the benefit of consumers.

Consumer Protection

When we talk about a system that everyday Americans count on to call 9–1–1, businesses, and loved ones, we cannot ignore users' need for consumer protections in the network. Competition is important, but it does not always guarantee consumer protection. From the privacy of phone calls to truth-in-billing to slamming and cramming, Americans rely on a safety net of rules that protect them when they communicate with one another. Throughout and after the PSTN transition, consumers must continue to be adequately protected—including effective recourse through the timely resolution of complaints.

But on the Federal level, the Federal Communications Commission has only extended privacy rules to interconnected VoIP services by reasoning that those VoIP services send calls to and receive calls from the traditional phone network.¹² It makes sense that customers should be able to rely on the same protections they have always enjoyed when they switch to what by all appearances seems like a pure replacement for "regular telephone" service. However, without further guidance or action it is unclear how the FCC will be able to continue applying these rules to VoIP by relying on its authority over the traditional phone network when the traditional phone network as we know it has been retired.

Even worse, "slamming" rules that prevent carriers from switching subscribers' services without permission and "cramming" rules that forbid carriers from adding unauthorized charges on customers' phone bills only apply to providers that use the older, TDM-based, technology, and do not apply to VoIP providers at all. Leaving consumers vulnerable to predatory practices with no avenue for recourse cannot be

¹² 47 U.S.C. § 222.

come the new normal. Consumers should not be punished for upgrading to new technology by receiving downgraded protections.

As the PSTN begins to transition to IP protocols and other upgraded technologies, policymakers must come to terms with how they will continue to protect consumers post-transition. All signs indicate that consumer protection rules will be equally, if not more, important post-transition than they are today, and if anything consumer protection agencies will need flexibility to ensure that current and future consumer protection rules serve the same basic social needs as they do today.

Network Reliability

A comprehensive framework for the PSTN would be incomplete without a principle ensuring that the basic mechanisms of the network will continue to function throughout and after the PSTN transition, even and especially in emergency situations. Above all else, Americans rely on their communications networks to work consistently and reliably. Above all else, a successful transition means that phone numbers still work and calls still go through with the same reliability they do today.

The first and most fundamental criterion for network reliability is ensuring that basic network mechanisms will continue to function during and after the transition. We must therefore determine how the fundamental mechanisms underlying the phone network today will continue to operate when the traditional PSTN technology no longer exists. The FCC currently exercises its authority over phone numbers to distribute phone numbers through the North American Numbering Plan (NANP). Most VoIP providers must buy phone numbers through another carrier that uses the PSTN instead of obtaining numbers directly from a NANP Administrator. This raises the stark and critical question: who will be able to obtain numbers when all carriers have transitioned to IP-based technology? How will phone numbers work in a world with no TDM-based PSTN? These are questions that we absolutely must answer if the phone network as users now know it is to continue operating post-transition.

After the transition, there will also be no “copper safety net” to offer the reliability that users have come to expect with basic phone service. Nevertheless, users’ phone service—regardless of the protocols or materials it uses—must be able to withstand emergency situations. Even at this early point we are witnessing phone network technology “upgrades” result in less redundancy and back-up power in the system and increased reliance on the commercial power grid, creating a single point of failure when users need to communicate most. This does not mean that the only answer is to hope that fiber or wireless services suddenly become self-powered as copper is, but it does mean that we must find new ways to ensure a reliable phone system that doesn’t let customers down when they need it most.

The impact of the transition to IP-based networks on reliability is unfolding before us in real time. After Hurricane Sandy, Verizon acknowledged that the storm caused outages in its FiOS voice, internet, and video services, while users across the affected areas lined up outside to use pay phones connected to the copper network. Similarly, this past January customers of AT&T’s U-verse voice, internet, and video services suffered outages for days due to problems with a software upgrade. As one customer hit by the outage put it, “You go on U-verse, and the old handy dandy landlines that would work no matter what? . . . That’s not happening any longer.”¹³ This, of course, is no new phenomenon. Outages by cable providers have been periodically denying subscribers their services for years. Such outages would be unacceptable in the TDM-based, circuit-switched world, and they must be equally unacceptable in the IP world.

This means that the FCC, and other regulatory authorities, must determine how they can ensure that the post-transition PSTN continues to guarantee robust service for everyday uses and for emergency circumstances, when users need communications services most. As the PSTN continues its transition, policymakers must decide how they will ensure that consumers can continue to expect that their phone calls will go through, every time.

Public Safety

Finally, it is unquestioned that when someone calls 9–1–1, that person needs to know beyond a shadow of a doubt that she will be connected in one second. Everyday Americans rely on 9–1–1 daily to call for help in time of need. The FCC has already begun to look to the future of public safety requirements with the Next Gen-

¹³ Brian X. Chen, *AT&T’s TV, Phone and Internet Service is Down in Some States*, N.Y. TIMES BITS BLOG (Jan. 23, 2013), <http://bits.blogs.nytimes.com/2013/01/23/atts-tv-phone-and-internet-service-is-down-in-some-states/>.

eration 9-1-1 transition.¹⁴ This conversation, however, is best situated in the broader context of the overall PSTN transition, both to evaluate the effect of 9-1-1 proposals on other aspects of the network, and to anticipate the impact of non-9-1-1 proposals on our emergency communications structure.

Public safety rules must ensure that emergency services like 9-1-1 and geolocation technologies continue to help first responders offer emergency care, regardless of whether the network that the customer uses is wireless or wireline, copper or fiber. The conversion to an all-IP network offers an opportunity to further facilitate emergency communications, and that opportunity must not be squandered. This also includes ensuring that the thousands of alarm systems and alarm system standards that rely on access to a “telephone line” are not disrupted by the transition, as we have seen them be disrupted by the transition to Voice Link in Fire Island, New York.

When the traditional architecture of the PSTN no longer exists, it is crucial that consumers are able to contact emergency services when they need it most. The moments in which the public relies upon emergency services like 9-1-1 are literally life-or-death, and it is crucial that policymakers implement rules that maintain the public safety components of the phone network. To its credit, the FCC has already begun the process of creating a framework for next-generation 9-1-1 services, but these issues must also be considered in the broader context of the overall shift of the PSTN to new technologies.

Conclusion

The transition of the phone network presents new opportunities and new challenges for policymakers seeking to ensure new networks constitute a true step forward, not a step backward, for everyday Americans. The stakes are high. The choices policymakers make now will impact how the public conducts business, communicates with loved ones, and reaches emergency services. Public Knowledge urges Congress to follow the basic values that have informed our communications networks since the founding of our country to ensure we can all continue to enjoy a communications network we can count on.

¹⁴The FCC is also working with surer authority in this area compared to other aspects of the PSTN transition, based on the Next Generation 9-1-1 Act. *See* Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96 (2012), Title VI, Subtitle E.

Public Knowledge		
What Voice Link Doesn't Do That Copper Does		
	Traditional Copper Phone Service	Verizon Voice Link
Will 911 work during congestion?	✓	X
Will medical alerts work?	✓	X
Does it provide access to broadband?	✓	X
Will home security systems work?	✓	X
Does credit card processing work?	✓	X
Can you make international calls (without a separate international calling plan)?	✓	X
Will you be able to use calling cards?	✓	X
Will you be able to receive collect calls?	✓	X
Will you be able to make a local call without an area code?	✓	X
Will fax machines work?	✓	X

APPENDIX B

The following are just some examples of the hundreds of public comments submitted to the New York State Public Service Commission in its proceeding on Verizon's Voice Link deployment in Fire Island.¹⁵

1. "I bring my 93 year old mother who is in home hospice, to my beach house on Fire Island, and having an old fashioned landline is crucial to my feeling safe about having her there."—Sonia Gluckman, 7/15/2013
2. "We have also been relying on cell phone service through Verizon which has been spotty, at best. My cell phone works in our house while my husband's does not. He is a physician at NYPresbyterian Hospital and relies on his cell phone to take emergency calls when he is away from Manhattan. Sometimes these calls are urgent and confidential."—Maureen and Samuel J. Mann, 7/15/2013
3. "In hurricanes Irene and Sandy the land line phone service was a life saver. Without the land-line phone I would have had to keep my cell phone off to save battery power for 911 calls. I am a senior citizen. With a cell phone I could not receive calls from doctors. If land-line is dropped then people will die. Because cell phones will run out of battery power and people will not be able to call 911. My whole area was out of electricity after Sandy. I lost power for 5 days in hurricane Irene and 8 days after Sandy. My area loses power many times a year. About a month after hurricane Sandy my area lost power again for 12 hours. The land line phone has to stay."—Albert Dresner, 7/12/13
4. "The bigger issue has been internet. I and most Fire Islander's previously had unlimited DSL service (through the copper wires) for about an additional \$30 per month, tagged on to the phone service. Now, for the 4G service (which is admittedly faster), I am paying \$80 per month for just 10GIGs per month of data (I believe the cost is \$10 per month for each additional 2GIGs). Those 10 GIGs just get me and my family through a month of e-mail, normal levels of work related Internet use, and basic household Internet usage. . . . One could easily spend hundreds of dollars or more per month, at Verizon's rates, in order to regain the amount of data we previously had pre-Sandy. This is where Verizon is truly taking advantage of us all, and what people are most upset about."—Keith B. Stein, 7/10/2013
5. "Cell service is often poor on Fire Island and it can often times requires several minutes to get cell service and may require you to physically move to another location to pick up service. I have previously had a heart attack and do not want to rely solely on cellular service in case of an emergency. We need a hard line service provider on the Island."—Arthur Rhein, 7/8/2013
6. "Please help with this very bad situation with Verizon service at Fire Island. They will not repair my landline, which my husband really needs, as he has a pacemaker, which has to be monitored by a land-line. They also refused to connect my DSL, even though they charged me the monthly fee right through the winter, when I questioned this, they said they would transfer me to the billing department, and I was promptly disconnected!!!! I have a Real Estate office here in Fair Harbor, and I am getting SO many complaints about Verizon service, (or, NON service)."—Jean Ufer, 7/8/2013
7. "I'm extremely unhappy and very nervous that our hardline or copper will be cancelled. We are year round residents on Fire Island and need a hard line to run our business and to monitor our property from The DSL line. After the storm, I temporarily had the Home Connect system and it worked poorly. Calls would ring for 30 plus times before I even knew they were coming through and we had no Internet which is essential to run a business. Sometimes calls didn't even go through. Please don't allow Verizon to cut our lines without offering a suitable option. VOICE LINK DOESNT WORK."—Barbra Heller, 7/6/2013
8. "I'm single, live alone and am now considered 'senior.' While I don't use the telephone too often I rely it being there for essential help in emergencies. I am active on the Internet and require it for business connections. Life without

¹⁵See New York State Public Service Commission, *Tariff Filing by Verizon New York Inc. to Introduce Language Under Which Verizon Could Discontinue Its Current Wireline Service Offerings in a Specified Area and Instead Offer a Wireless Service as Its Sole Service Offering in the Area*, Case 13-C-0197, <http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterSeq=42688>.

a real telephone would be precarious and dangerous on our relatively isolated island.”—Patricia Robbins, 7/5/2013

9. “During superstorm Sandy, we lost power for 2 weeks. Although the telephone line fell and was across the backyard, we had telephone service. We were able to call Verizon to come and fix the line. We were able to call the children and tell them that we’re ok. We also were able to call LIPA to tell them about the power outage. We are senior citizens in our 70s and are afraid of not being able to call for assistance if needed.”—Robert and Barbara Grosswald, 7/4/2013
10. “My father was on life alert and many of the seniors who lives alone depend on that service. I work in a Nursing and Rehab Center and many people who have fallen and have medical issues live alone.”—Mr. and Mrs. Howard Bedell, 7/2/2013
11. “As a home owner in Fair Harbor I am distressed and concerned about the ‘solution’ of Voice Link over the copper wire system for our phones. Already I have had an incident with being unable to make a call from my cell phone because the network was busy. Thankfully it was not an emergency call, but if it had been the delay in getting through would have been significant. With an aging mother who does come out to visit, the idea of not being able to reach 911 in an emergency is terrifying.”—Jennifer-jo Moyer, 7/2/2013
12. “As a NY resident with elderly (80+) parents, and an elderly (80+) aunt with health issues and Parkinson’s Disease on Fire Island for the entire summer, I am concerned that the Voice Link system will not meet their needs in a time of emergency. Cell phone signals are notoriously erratic particularly in poor weather, and particularly on Fire Island; and I am concerned that this system is more likely to fail in the event of an emergency. In my elderly aunt’s case, she will no longer be able to use her medical alert bracelet as it is dependent on a working landline. That she would be able to reach her cell phone after falling down seems unlikely.”—Ken Rothchild, 7/2/2013
13. “As a senior-age Fire Island customer since 1970, my wife and I are very dependent on a telephone system that we can rely on, especially during health emergencies. The research that I have done on the Voice-Link System tells me that its very unreliable and would be a terrible down-grading for us causing lots of anxieties. Please do not give Verizon a go-ahead ruling on their ‘consumer un-friendly plan.’”—Lee Epstein, 7/1/2013
14. “We need Life Alert systems, our home alarm system and communication with the outside world, especially in times of weather disasters such as the recent Hurricane Sandy. During that storm, which caused electrical power outages, our cell phone also failed. Our landline made it possible for us to contact our son and daughter, as well as emergency sources, should it become necessary. Since we do not drive, having a landline made it possible to contact neighbors should we need food and help. There are many stresses, which accompany aging. Losing touch with the outside world should not be another source of worry.”—Phyllis and Herbert Hildebrand, 7/1/2013
15. “If Verizon were to abandon the South Bronx for landlines with the argument that the neighborhood is unprofitable due to income, credit worthiness problems or vandalism, it would never fly. Why then can Verizon be allowed to reduce service levels to Fire Island?”—Kevin Lee, 6/28/2013
16. “We rely on phone service for emergency response. In the short time that we have had Voice Link we have had problems in rainy weather. The Jetpack Internet service that, with our limited mobility, we rely on to order medications, food and communicating with physicians is painfully slow and does not work at all on weekends.”—R. Bruce Minoff, 6/28/2013
17. “My husband and I are seniors, and in the future may need life alert. That does not work on VoiceLink. There have been break-ins in our neighborhood, and we are going to install an alarm. That doesn’t work on VoiceLink. We have been waiting not so patiently for FiOS to be installed in our neighborhood. I have initiated many complaints to Verizon for noise on our line. Our DSL is so slow, it seems as if we have dial-up Internet service.”—Jean L. Coleman, 6/28/2013
18. “If you are unfamiliar with Fire Island, there is very little medical service and the only way off the island is a scheduled ferry service or, for some people who have permits and trucks, a very long drive. When someone needs to be rushed to the hospital, they are evacuated by helicopter, which makes timely emergency calls of the essence to save lives.”—Nora Olsen, 6/20/2013

Senator PRYOR. Thank you.

Let me go ahead and ask Mr. Gardner the first question. And that is, you mentioned in your statement that residential retail is basically out of date in terms of the regulatory framework. So what is the solution from your standpoint?

Mr. GARDNER. Thank you, Senator Pryor.

I think when you look at residential markets, it has changed greatly in the last 10 years. In 1996, nearly 100 percent of the people in this country received wireline phone service from the telephone company. At the current time, that number is in the 25 to 30 percent range. That market share has changed a lot. As was mentioned by one of the Senators, 43 percent of the people are wireless today, wireless only.

And so I think what we need to do is recognize there are big differences between residential and enterprise in terms of the market opportunities. We need to look at reforming regulatory policy to fit with what the construct is today. Wireline companies are a much smaller piece of the pie, yet they still carry the brunt of the regulatory burden.

Senator PRYOR. I want to ask Ms. Bloomfield, if I can, a follow up from something you said. You talked about there should be a Connect America Fund for smaller providers. How would that work?

Ms. BLOOMFIELD. So right now the Connect America Fund that you hear so much about is for those carriers that are not the rate-of-return carriers. We need to create a Connect America Fund for the small rural carriers that will really focus on ensuring that they continue to do the good work that they have been doing in these markets. When you look at the evolution and the fact that there are 92 percent of these subscribers in these small rural communities served by these rate-of-return carriers that actually have broadband access, it is pretty miraculous. And I think we really become a showcase in a lot of ways for rural areas of the rest of the world because we recognize how important it is to connect everybody.

So I think that there is a number of different ways to go about it. We have been presenting plans to the FCC. There is, I think, a recognition that when you look at the carriers' costs and reconcile what took place with the transformation order a couple of years ago in terms of the lost revenue on the intercarrier compensation side, kind of reconciling it to the point where there are financial incentives for these companies to actually make the investment that we need to have in these communities.

And I would point out, as an example, one of the things that I think is a little bit ironic about not having a Connect America Fund is right now the way USF is now set for these carriers is it supports a voice network. So we are talking about people cutting the cord. We are talking about people going to different networks, but you still might want that wired broadband connection to your home because it has a very high data capacity. Well, right now our carriers do not get support. If that customer drops the voice service, wants the wired network for their broadband, they do not get USF support. So all that is going to do is increase the cost for that consumer to actually get the broadband service. We need to move

into a broadband-enabled environment for the rural carriers as well.

Senator PRYOR. Senator Wicker?

Senator WICKER. Thank you very much.

Let me begin with Mr. Downes. You mentioned that we are in the midst of a revolution, that the IP transition is already happening.

And you are based in Silicon Valley, I believe. Is that correct?

Mr. DOWNES. Yes, sir.

Senator WICKER. Some people are advocating a regulatory route to approaching this transition. Others advocate a lighter regulatory touch. As Congress looks at this issue and as the FCC looks at this issue, what do you say to that? Do we need a lighter touch, or do we need to delve into a whole new regulatory scheme?

Mr. DOWNES. Well, Senator, I think the easiest way to think about it is just to look at the two worlds in which consumers are now living. We have the old PSTN world and we have the Internet world largely unregulated, the other very regulated still. It is clear where consumers are voting. They are moving from one to the other, and they are moving from one to another, as I say, for very good reasons. The service is available through the Internet. The innovation that is possible, the entrepreneurship that happens means that things can change and evolve very quickly and have very quickly, obviously, quicker than anybody would have imagined in the last 15 years.

Frankly, when we in the technology industry hear discussion about which of the title II sections should be applied to IP networks in the future, we are baffled. We do not understand even how that is possible, but definitely not why we would think it is a good idea.

In matters such as interconnection, for example, we do not have interconnection. We have piercing arrangements. They have worked remarkably well. According to the OECD, 99.5 percent of them are not even reduced to writing. That is how sort of straightforward they are. Some of them are paid. Some of them are unpaid. Some are for large, some are for small networks connecting to each other. It is on a global basis, by the way. This is not just in the U.S.

And, of course, it does not always work perfectly, but when it does not, the resolution is relatively easy. In fact, this is not about networks having power. Increasingly the content providers have a leverage that they are exerting on this process as well.

So we like the fact that essentially, whether unintentionally or otherwise, the 1996 Act left broadband technologies out of the regulatory scheme of the FCC and particularly out of title II. That is why it has worked, frankly, and it will continue to work as long as we leave it alone.

Senator WICKER. OK. We have two volunteers to answer that.

I think you said these problems will take care of themselves if left to the current regulatory structure. Is that correct?

Mr. DOWNES. Yes, that is right. As I said in my testimony, there are important roles for Congress and the FCC in the transition itself making sure that the process happens smoothly and hopefully more smoothly than it did in the digital television transition. But, yes, in the actual unregulated Internet market, things work re-

markably well. We have the multi-stakeholder governance process. We have all sorts of mechanisms, engineering-based regulations. It is not unregulated. It is engineering regulated. And that really works and has continued to work for a very long time.

Senator WICKER. Ms. Sohn, I believe your hand was up first, and then we will let Mr. James dive into this issue.

Ms. SOHN. So interconnection has been the law for 100 years and nobody has regretted it. Let me give you a real-world example of what happens when interconnection does not happen. Now, granted, this is in the wireless space, but it is the same issue.

So in Montana, AT&T decided they no longer wanted to have a roaming agreement with Verizon. So what is happening is police are having to drive 30 miles out of the city so they can get connectivity. When you have players—and we are talking really about two or three large market players that do not want interconnection. Everybody else does. Most of the cable companies do. All the competitive telephone companies do. The rurals do. We are talking about two or three companies. If they can leverage their market power, then you have got trouble.

And my question is do we really, really want to roll the dice and wait until there are interconnection problems so a customer from AT&T cannot call their mother who is on Comcast? I do not think we want that. And as I said before, interconnection has been a value and a mandate for 100 years and it has worked marvelously well. And I do not understand why we should retreat from that.

Senator WICKER. Mr. James?

Mr. JAMES. Thank you, Senator.

I agree with a lot of what she just said.

First of all, we need to separate, if we can, some of the issues.

Managed voice traffic that people have depended upon, particularly businesses with regard to the quality but consumers as well, is a service that has always been handled by exchange traffic from one carrier to another. Under the 1996 Act, those are negotiated for the terms and conditions of that.

We have made conversions like analog to digital to SS7 signaling and now to IP. So we are only talking about the managed voice. We are not talking about other broadband services or the Internet in general. We are talking about maintaining a quality, reliable voice service for those customers who need that because of their business or because they want it at home. So we do not want to confuse the issue here. And that is what all carriers have to have in order to serve their customers. Otherwise they cannot complete calls, and that needs to be done in a just and reasonable manner.

Thank you.

Senator WICKER. Thank you, Mr. Chairman.

Senator PRYOR. Thank you.

Senator KLOBUCHAR?

Senator KLOBUCHAR. Thank you very much, Mr. Chair.

I mentioned earlier this issue of call completion which has become a real problem for rural America. I cannot tell you the number of businesses that have told me anecdotally that their customers told them that the calls were dropped. And then actually they have been able to collect statistics showing that. And that is

why Senator Fischer and I have this resolution that will be coming up next week in front of this committee.

As we know, the FCC is making some progress on this issue, and there is much more that needs to be done and it needs to be done soon. There was a consent decree between the FCC and Level 3 Communications to see some improved performance, and I applaud that but the problems still persist.

Ms. Bloomfield, do you think that the FCC's recent enforcement advisory it published this week means that the FCC will be taking further enforcement action?

Ms. BLOOMFIELD. It is a very encouraging sign. And I think, again, the leadership that you and Senator Fischer have shown on this has helped elevate the issue. And the stories are heart-wrenching.

I think there are a couple of things. I think the enforcement action would be appropriate. I think Level 3 was a good measure, but what we saw, interestingly enough, about a week after that enforcement action, the problem just picked back up in tenfold because, again, these least-cost routers then look for new markets and new ways to get into these rural markets. And then the calls just do not terminate.

So I think it would be nice to have the FCC move as quickly as possible. I think having this issue hang out there is difficult. I continue to get calls from consumers in rural America as well, and you know, part of it is they are directed to the FCC website. Well, you are just a consumer. Going to that website, trying to fill out this form explaining where your call originated, where it was terminating, you know, it is onerous and it is difficult. So I do think some more data and transparency will help a great deal.

Senator KLOBUCHAR. Very good.

Ms. Sohn mentioned the copper issue. And I think we all know there are benefits to copper, and many companies undergoing the IP transition will continue to use copper. Many businesses in Minnesota give services up to 220 megabits per second over copper with a digitally bonded connection. Copper is still valuable in the broadband network. We have a hybrid network and we will continue to have copper into the near future.

Could you explain maybe, Mr. James, why copper is so valuable?

Mr. JAMES. Oh, thank you, Senator. It absolutely is. It is the most ubiquitous type of facility that is out there, and it is capable of handling up to 100 megabits of capacity. It is highly reliable. It is DC powered. The other things that are very important about that is the technology continues to grow the value of copper. So that it now provides all kinds of different applications particularly for small-and medium-sized businesses because it reduces their cost. And so the Ethernet over copper is continuing to expand in our industry. And it is similar to all the capabilities to fiber in many ways. It can offer video content over it, triple play. So copper is a very valuable part of our network, and it is the most crucial last-mile connection because it is so universal. And many of our members who deploy fiber still rely on copper for multi-location businesses where they are off-net. It is very powerful.

Senator KLOBUCHAR. A somewhat related issue, Mr. Gardner, I appreciated the support USTelecom has given to the bill that I

have with Senator Graham and Senator Schumer and Senator Hoeven, which makes it an explicit Federal crime to steal metal from critical infrastructure. We have seen a vast increase in the number of metal thefts in our State. Some companies, electric companies, being preyed upon six, seven times. Bronze stars in veterans' graves being taken. And so I know this is a concern for telephone companies as well as really all businesses. And I just wanted to note that bill if anyone is interested in looking at it. We are moving it through the Judiciary Committee.

Ms. Sohn?

Ms. SOHN. I just wanted to make the Subcommittee aware that there are, I believe, two petitions pending in front of the FCC asking whether when incumbents give up their copper or leave their copper in the ground, whether competitors should have access to it either for free because, of course, taxpayers have already paid for it or at a reduced price. Again, that has been pending since, I believe, 2007. I think with this transition, that is something the FCC should look at like sooner rather than later.

Senator KLOBUCHAR. OK, good.

My last question on rural broadband. I think we know it has not expanded as rapidly as we had hoped even though there have been improvements. The Universal Service Fund and the support from loans made by the Rural Utility Service are important tools for supporting broadband expansion. They have been used in my State. Several of you mentioned in your testimony—I also find it troubling that the RUS Broadband Program only loaned 37 percent of the money that Congress has appropriated to it.

Ms. Bloomfield, in your view what is holding back investment? What does it mean specifically for states like Minnesota that have a very short construction period as the winter looms?

Ms. BLOOMFIELD. It is an excellent question, Senator. It is the regulatory uncertainty that is hanging over these carriers that because of the fact that the way the quantile regression analysis works, the cap is done on an annual basis. So you have no idea year to year what your return is going to be. So folks are feeling really paralyzed about do I put money in the ground, do I go ahead and make this. You know, I have a fiber to the node plan or a fiber to the home.

We actually did a survey and found that 68 percent of our member companies have chosen to either stop or to slow down their construction progress. And you know, at a time where there is more and more demand for broadband, the capacity needs to be greater, there is more data that is writing over it, it is a frustrating development to see. But I think they are looking at it thinking I am not sure I can repay this loan. So how do I take out a loan?

And we are seeing the same on the regular RUS lending program on the telephone side as well as the broadband side. They are just not going in. And not only are they not going in, those that are going in are having a harder time getting loans approved because even RUS is unable to assess their credit worthiness because they do not know what their revenue stream is going to be in the following year. So it just becomes a very vicious cycle.

Senator KLOBUCHAR. Very good. Thank you, all of you.

Senator PRYOR. Thank you, Senator Klobuchar.

Senator Fischer?

Senator FISCHER. Thank you, Mr. Chairman.

If I could, Ms. Sohn, follow up a little on the call completion that Senator Klobuchar brought up in her questioning. In your opinion, what actions do you think Congress or maybe the FCC can take in order to continue to address this problem?

Ms. SOHN. I think the most important thing that Congress and/or the FCC can do is to make sure that they have the authority to make sure that rural residents get their calls completed. So once the public-switched telephone network goes away, away with it goes the FCC's ability to do anything. As it is, they have authority now and it is still taking them forever. But again, once this transition is complete, they do not have the power under the law—they will not have the power under the law to fix a horrible problem like this.

And I thank you and Senator Klobuchar and the other Senators, Senator Pryor for that resolution.

So that is the single most important thing that Congress and/or the FCC can do, is to ensure that they have the ability to protect rural residents.

Senator FISCHER. Thank you very much.

Ms. Bloomfield, as you know from past hearings, I am very concerned about the regulatory uncertainty that is out there as well. And you just addressed part of that with the quantile regression analysis.

Can you expand on the mechanism that your organization proposed to replace that?

Ms. BLOOMFIELD. So absolutely. Thank you.

I think there are a few things, and you have 50 independent carriers in the state of Nebraska. So you have got a lot of folks covering a lot of territory out there.

So there are a couple of things I think. You know, you have got the quantile regression analysis, and the problem is it is now in place. So I think 2 years ago we had our own proposal, but right now I think we have to look at this and think can we fix it, can we eliminate it, can you stretch out the cap so that instead of every year they are recalibrated, you have a longer period of time, or can you use them as a trigger. And again, it is kind of the art of the possible. You know, is there a way to make that work to eliminate some of that regulatory uncertainty?

So I think that we are working really hard with the FCC to make sure the data is correct. We are having issues with that, getting that in place. I think there are also things that we need to be looking at like how do you get some of the things like the safety net additive dealt with. How do you deal with the waiver process so it actually works for carriers? How do we do things like—there is a further notice that is out there from the FCC that is looking at changing rate of return. It is piling on when these carriers do not even know what the impact is going to be. Having that rate of return proceeding hanging out there is another factor that is just creating more of that uncertainty.

And an issue that I know that we have discussed before is USF contributions. You know, if you deal with contributions, can you

look at the entire Universal Service mechanism a little bit more holistically? I think all of those would help a lot.

Senator FISCHER. Do you think you are moving forward in any way with the FCC on making any of those changes that you are recommending?

Ms. BLOOMFIELD. We are hoping. We are having a lot of discussions. Our team is in there every day. We have probably filed about 400 pages worth of suggestions and commentary and feedback and analysis. We just continue. You know, that is where a lot of this action is taking place at this point in time. But I think congressional involvement and oversight is incredibly critical.

Senator FISCHER. I hope you will keep my office up to date on how that is moving forward.

Also, you mentioned that the waiver process is inefficient. Why do you believe that this application process is so cumbersome?

Ms. BLOOMFIELD. It is very difficult. The process is cumbersome enough that folks actually have to hire legal counsel to do it. There is a pretty high filing fee, and once you get into the process, it is hundreds and hundreds of pages that folks have to be able to document, get all of their data from their companies to submit. And to date, to be very frank, we have not really seen very many approved. So folks are willing to go through this because they are under such duress, but at the same time, there is no end result that kind of shows that the data they have put forth has made any difference. So I think a lot of carriers are looking at it thinking I do not have \$100,000 to spend on a filing process and, at the end result, not get any relief. So it is really kind of putting folks in a very tough position.

Senator FISCHER. Thank you. I look forward to working with you on those issues.

Ms. BLOOMFIELD. Thank you.

Senator FISCHER. Thank you, Mr. Chairman.

Senator PRYOR. Thank you.

Senator Blumenthal?

**STATEMENT OF HON. RICHARD BLUMENTHAL,
U.S. SENATOR FROM CONNECTICUT**

Senator BLUMENTHAL. Thank you, Mr. Chairman.

I would like to ask a question relating to legislation that I have joined Chairman Rockefeller and Senator Klobuchar in introducing, the Fair Telephone Billing Act of 2013. And as you know, the bill would prohibit wireline telephone companies and other providers from placing third party charges on telephone bills, "cramming" as it is popularly known. And this issue is one of great concern, I think, across the country, spreading ramifications. The FCC is currently considering strengthening its rules that address cramming for landline services and extending those rules, which I hope it will do to wireless.

Let me begin. Ms. Sohn, what do you think about extending the FCC's cramming rules to include wireless and other services?

Ms. SOHN. We absolutely agree with you and we thank you and Senator Rockefeller for your leadership on this.

I mean, cramming practices are no less horrible on wireless and voice over IP technologies than they are on wireline technologies. Consumers do not get any less hurt.

Again, to repeat myself a little bit, while the FCC now can probably do something about it and they should if Congress does not act, once the PSTN goes away, then the FCC's ability to deal with something like this goes away. And it does not matter what the technology is. People can talk about copper, fiber, IP, what have you. It is about the social goals. It is about the needs of our society and whether we are going to leave anybody behind.

Senator BLUMENTHAL. Any of the other panelists have views on that issue?

Mr. JAMES. Senator, I would just say we agree with you that it is a difficult practice. And we will take a look at the legislation and see if we can work with you on it.

Senator BLUMENTHAL. I would appreciate that, and the same with other members of the panel because I do think that there is really no justification for this practice. I think everyone would agree except for the extreme outliers who engage in it. And I do hope that we can extend and strengthen these measures.

Let me ask also again beginning with Ms. Sohn. What consumer problems do you think are most pressing in this area when we look at extending protections that copper wire enjoys right now or strengthening those protections? In your testimony, you note credit card trouble, 911 access. Are those the principal ones? And again, I am going to ask the other panelists to follow you.

Ms. SOHN. Well, many of them are important, but what is more important than the ability to make a 911 call to make sure that if, God forbid, your husband has a heart attack, that you can get through to an ambulance? There is really nothing more important than that. And similarly that first responders can also use the network. That is critical. And medical alerts. People on Fire Island reported that their Life Alert would not work with Voice Link. Anything that deals with life and death is the most important thing in the world.

But, look, small businesses in Fire Island are suffering because credit cards cannot go through, because faxes cannot go through. I know people say, oh, fax. That is so old-fashioned. But, you know, lawyers depend on that, you know, to get documents and things like that. So there are many, many things. Again, that list I think is a good start of items that people need functionality from their networks to do it.

And again, it does not matter what the technology is. What matters is that people have essential services that protect their ability to speak, to engage in economic life, and frankly to live a good life.

Senator BLUMENTHAL. Any of the other panelists?

Mr. JAMES. Yes, sir. Senator, we could not agree more that the last-mile connection is the bottleneck for us to be able to provide competitive alternatives to customers, and without it, they are isolated from that availability of choice to vote with their feet, to pick a provider that they think is providing the quality of service or the types of services that they require. And that is essential. Over 60-plus percent of the buildings in the United States that have 20 or less employees have only copper as the only connecting facility.

And so it is essential for customers to be able to have that alternative, and for our members to be able to stay in this market, it is a requirement.

Senator BLUMENTHAL. Thank you. Thank you very much.

Senator PRYOR. Thank you.

Let me start, if I may, with Mr. Gardner again, and that is in your capacity as running the phone company Windstream. We have talked about copper versus IP and all that transition. Give us a feel for how your company is making that transition and where you are in the process and how you feel like that is going.

Mr. GARDNER. Well, I think, Senator Pryor, that is a very important issue for us at Windstream. We are both, as I said, an ILEC serving many rural customers across America and also one of the largest competitive players in the industry. Like many of the companies in this country, we are deploying IP technology very rapidly into our network.

I made my comments on the residential market. I think it is important to note also, on the rural side, that copper is often associated with customers out in the most rural areas. And the public-switched telephone companies are still providing the bulk of the services. In fact, Windstream has already built out broadband to 93 percent of all of our customers. For those most rural customers, often we are the only alternative out there as it relates to high speed Internet. So that is very important.

On the enterprise side, we have been deploying IP. We want to be in a position to serve some of the biggest companies in the country. Windstream today serves 80 percent of the Fortune 500, and all of our technology going in that side of the business are new soft switches, IP technology.

So I think that as we look at this issue nationally, we just have to have a balanced approach to this transition, understanding that different companies have different business models because of the cap structure, where they are located, et cetera.

Senator PRYOR. Mr. James, let me ask you. I know you want to follow up on that, and I want you to. But I also want to ask you about this trend where states are deregulating when it comes to IP, and I think there are maybe 25 states or so that have done that now. I would like to get your thoughts on that and what the proper role of State regulation is in all this.

Mr. JAMES. Certainly, Senator. Just as a follow-on to the comments just made, IP managed voice is agnostic to whether it is over copper or fiber. So those are separate issues.

As to the states that you mentioned, there are roughly 23 to 25 states that have deregulated retail residential services or retail services but have protected the wholesale obligations that are under the 1996 Act. And so we have seen that trend in those states.

Senator PRYOR. Is that a good thing?

Mr. JAMES. I think the markets between residential and business are different because people can choose multiple modes of how they want to communicate or conduct their business, their social life, and such, whereas businesses that are relegated to a location who have to have quality hardline services to be able to receive and get calls and make calls to their customers like a local hardware store

or, for example, like Walmart or any of those kinds of services—they need to have reliable service. That could also be offered by IP technology, but it would have the same quality of service standards that would be under the interconnection that we currently have under the TDM network. And that is what we are asking for, is that that same types of standards and network architecture be developed and agreed to by the carriers using just a different way of exchanging that traffic.

Senator PRYOR. Great.

Ms. Bloomfield, let me ask you one follow-up to what Senator Klobuchar and Senator Fischer were talking about with the call completion, especially in rural call completion. Does that have anything to do with this transition to all IP networks? Are those totally unrelated?

Ms. BLOOMFIELD. You know, it is a clear example of why we really do need rules of the road. I know my fellow panelists have talked a lot about you are really just changing a switching technology. It is not really a magic switch goes off and suddenly we have a whole new network.

So part of it is no matter what you do, you need to be looking at what happens to consumers. What happens to public safety. How do you ensure what happens in competition? How do you ensure that those safeguards all stay in place? So in a lot of ways, the call completion issue is a perfect example of what could go wrong if you are not looking at the transition in, again, kind of a surgical, piece-by-piece way that ensures that those guideposts are maintained.

Senator PRYOR. Thank you.

Now, we are delighted to have with us our freshman Senator from the state of Massachusetts.

[Laughter.]

Senator PRYOR. He is number 100 in seniority. I used to be number 100 in seniority. And the great thing about him is he has 37 years of experience in the Congress. We understand historically that he is the record holder of the longest tenure in the House to come to the Senate, and we are delighted to have you. I would invite Senator Markey to ask questions.

**STATEMENT OF HON. EDWARD MARKEY,
U.S. SENATOR FROM MASSACHUSETTS**

Senator MARKEY. Thank you, Mr. Chairman, very much, and thank you for that warm welcome. It is great to be here. I am looking forward to learning a lot about these telecommunications issues.

[Laughter.]

Senator MARKEY. So when I started, there was one phone company. It had 1.2 million employees and there were no competitors. That is my first hearing back in 1977. And this hearing really could not happen because there would be no other witnesses. And so we have come a long way and we have to continue to have discussions about this very dynamic area.

My bottom-line philosophy always has been that the whole key to this goal that we have to ensure that America is number one looking over its shoulder at number two, three, four, five in the

world is that we have to constantly be introducing Darwinian paranoia-inducing competition into the marketplace. And that is ultimately the key protection for our consumers on the one hand because they have more choice and it is also the key for the creation of the new jobs here in America because we are the innovation center and not some other place in the world.

So that is kind of our challenge and we have to do it with consumer protection, with reliability, with Universal Service, with all of the old principles. So as you move to new technologies, you cannot leave behind old values. They have served us very well and ultimately competition is a part of that mix in a very big way because consumers are beneficiaries.

So I guess what I would ask is—I will start with you, Ms. Sohn, if I could—to talk a little about this issue of a migration toward wireless and kind of the sense that some people have that if we continue that migration towards mobile phone usage, that is a big reason why we should have less of a concern about the protections that are built into the 1996 Telecommunications Act for wireline. How do you view that issue?

Ms. SOHN. So at the risk of sucking up to you, Senator Markey, it is wonderful to see you on the dais. Welcome.

So my response to that is 141 million users still rely on wireline services, both copper-based phone services and managed VoIP. And as USTelecom says itself, 99 percent of video, nearly 99 percent of data still comes over wireline. So wireline is still king, and there are many places, particularly in rural areas, where mobile just does not work.

The other thing—I think this is really important—is wireless technologies depend on a wireline backbone. It is coexistent with wireline. So we really, really have to make sure that our wireline systems are built out particularly in rural areas. So wireline is not going away anytime soon, and the protections that wireline brings—

Senator MARKEY. So what could be an unintended consequence of removing wireline protections from your perspective?

Ms. SOHN. As I mentioned before, mobile does not have reliable 911 connectivity. You cannot use your alarm systems. Many alarm systems do not work with mobile. Medical alerts do not work with mobile. There is a wide variety of functionality that wireline has. And as I said before, wireless does not work in many, many places or it does not work well. And we are seeing more and more stories of people complaining that they do not have good connectivity. In fact, there is an appendix in my testimony that lists 18 of hundreds of them.

Senator MARKEY. Mr. James, do you believe that local competition rules need to stay in place, that they are still necessary even as we move to more of an IP-based phone system?

Mr. JAMES. Absolutely, Senator. We believe that the 1996 Act is technology neutral, and the fact that we can progress to the IP transition, just like we have done with other transitions in the network, also access to last-mile facilities is essential. Without the wholesale side of the industry, there is no real retail competition, and competition is the best protection for consumers to be able to have multiple companies who have the ability to offer services that

you want to buy at a value price and utilizing the network that can be available to them. That is why it is so important for copper to be accessible, and we are continuing to deploy our own facilities but we do need those tenets of the 1996 Act.

Senator MARKEY. So you are saying that copper is a way of ensuring that there is real access, that there is competition, that there is a way for smaller companies to be able to compete.

Mr. JAMES. Absolutely. It is very extremely valuable. The technology continues to improve. We are up to 100 megabits. We have extended distances. We now have vectoring. There is all kinds of technology development that shows that copper has a greater value today than it did 2 years ago, 3 years ago. It is amazing what is being done with that technology.

Senator MARKEY. And that is because you can enhance the capacity for copper to be able to deliver digital services.

Mr. JAMES. Exactly. And if the recent case of the storm in New York where all the copper was removed from two central offices—our member companies lost their investment that was embedded in those central offices, could not offer the advanced services that they were offering over Ethernet copper to their customers. So they were disconnected from all their customers, could not reconnect to them, and those customers had to find an alternative because our members could not reach that connectivity because of the alternative that was offered to them by the carrier at that time was a boxed service which could not be added services on top of that the business customers really wanted to buy.

Senator MARKEY. So what you are saying is that as those competitors are removed from the market, then there is less pressure to improve the service.

Mr. JAMES. Exactly.

Senator MARKEY. And that the incumbents would be providing. You need that competitive dynamic in order to ensure that there is a constant upgrade so that customers have choice. When you remove the competition, you remove the likelihood that there is an upgrade.

Mr. JAMES. And in that instance, our members were relegated from being advanced technology companies of offering enhanced services to just resellers, and that is not what they wanted to be. They added that value through what they installed, what they risked their financial resources in order to provide to those customers.

Senator MARKEY. Thank you.

So, Ms. Sohn, can you follow up a little bit on what Mr. James is saying?

Ms. SOHN. Well, look, nobody benefits more from competition than consumers. Competition lowers prices. It improves services. Look, I am old enough—we are both old enough—to remember a time where there were 6,000 competitive ISP's, and each American had a choice of 13 different ISP's, Internet service providers. That was a great time. Unfortunately, because the U.S. has exported many of its competitive policies, we really have a shrinking competitive market. And I think in this new IP transition we need to see whether we need to expand our competitive policies not shrink them.

Senator MARKEY. Mr. Gardner, could you comment on this?

Mr. GARDNER. Yes. I think it is very important. You raised a point that I think is—one of the things as we look at next generation regulation—and you asked earlier what do we think about wireless technology, et cetera. There is no doubt wireless is an incredible technology that has opened up many opportunities for all of our customers in this country.

But, again, as CEO of a wireline company, just to remind everyone of the criticality of our infrastructure, this year Windstream and many members of the United States Telecom Association have invested hundreds of millions of dollars building fiber out to cellular towers. So we are a critical part of that infrastructure.

And then as you look at the limitations that wireless has related to spectrum, WiFi is so critically important going forward.

So I would just ask that as you think about the new world, do not forget that wireline is still a critical part of the infrastructure.

And as we think about the transition, with all the transitions I think our regulatory policy has worked well. The world is changing. We just ask that you be balanced and manage this transition carefully and understand that different companies are at different places in terms of this migration.

Senator MARKEY. Yes. When you are creating policies, you just want to make sure that certain companies are not vindicated posthumously.

Mr. GARDNER. Yes.

[Laughter.]

Senator MARKEY. That the policy did not work. You want to think through the policy so that in fact you are ensuring that as you are opening up a new world, you are not accidentally destroying something which was a vital part of the fabric of the communications system.

Ms. Bloomfield, could you? Again, I am sure that the Chairman has already talked about the rural aspects of this. But when we were doing the 2009 stimulus bill, we built in billions of dollars into the stimulus bill in order to ensure that there would be greater funding for the rural aspect of this broadband revolution. Could you tell us how that has worked so far from your perspective?

Ms. BLOOMFIELD. So it was a great initiative by the administration and I think their emphasis on broadband is critical because we all know every one of us would attest to the economic impact it has on our society and on the economy.

The problem has been—you missed my whole story on Universal Service.

Senator MARKEY. I am sorry.

Ms. BLOOMFIELD. I would tie together for you why it has actually been probably not as successful. We are actually really struggling to get a lot of our members to finish their stimulus buildouts because they are very concerned about the regulatory uncertainty that has been created by the FCC's Universal Service Intercarrier Comp order. So they are actually not using that funding. We have got a lot of pressure to get them to try to use that funding. They have got one more build year to do it. Those carriers that are in areas like Massachusetts have a very short build season. And I think they are feeling stymied by it.

So I think there have been some great initiatives. Broadband is very important in rural areas. In some ways it bridges that distance, that handicap of distance that is even more important.

Senator MARKEY. So I would like to work through the chairman to work with you. Perhaps maybe we can make sure that policy works correctly.

Ms. BLOOMFIELD. That would be great. Thank you.

Senator MARKEY. Mr. Chairman, Mr. James would like to add 30 seconds, if you could.

Senator PRYOR. Yes.

Mr. JAMES. I just want to say that when Verizon was entering the Europe market as a new entrant, they had in their filings to the regulators—this is a quote—continued regulatory controls must remain in place to safeguard access to the necessary wholesale inputs and thereby support competition to the benefit of customers. Prices of these core access products should be as low as possible in order to facilitate a genuinely competitive marketplace and drive down the prices for customers. It is clear that the most effective way to achieve that is to ensure that the operators who have significant market power in the relevant markets adhere to strict price controls.

Senator MARKEY. So your point is where a big company is an entrant as a new competitor, they want competitive principles in place, but where an incumbent is already there, their views toward competitive policies are not nearly as enthusiastic.

Mr. JAMES. Yes, sir.

Senator MARKEY. And I thank you for that.

[Laughter.]

Senator MARKEY. And, Mr. Chairman, I would yield back the balance of my time.

Senator PRYOR. Thank you, Senator Markey. It is great to have you here.

I want to say to all of the panelists I actually have some more questions, as do a couple of other of our colleagues, but I think what we will do is just submit them for the record. We are going to leave the record open for 2 weeks. We would encourage all the Senators and their staffs to get the questions to the Committee as soon as they can. We will try to send those out to the panelists, and we would love for you all to respond to those. But we will keep the record open for 2 weeks.

With this, what we will do is we will conclude the hearing.

But I do want to thank the panelists for coming and your preparation and your hard work to get here, and we appreciate all that you do. And we hope that we will all keep talking.

Again, Senator Markey, it is great to have you with us today.

So with that, we will conclude the hearing. Thank you.

[Whereupon, at 1:31 p.m., the hearing was adjourned.]

A P P E N D I X

PREPARED STATEMENT OF HON. JOHN D. (JAY) ROCKEFELLER IV,
U.S. SENATOR FROM WEST VIRGINIA

Today's hearing on the state of wireline communications affords us an opportunity to take stock of the nation's public telephone network. That network is a source of National pride and ingenuity, and remains the envy of the world. In fact, one could argue that the public telephone network is a victim of its own success; we only notice the value of this network and its reliability and resiliency when we are forced to compare other communications networks to it.

The principle of "universal access" to communications is one of the basic tenants of the Communications Act of 1934, and it remains as vital today as it was then. We have reached out and covered nearly everyone—in urban, rural, and even many of the most remote areas of the world based in part to our nation's fidelity to the principle that all Americans should be able to benefit from the opportunities afforded by access to communications. We must continue to make sure that everyone has available to them the advantages that come with access to modern communications networks.

The nation's wireline infrastructure is at the heart of this nation's communications system and policy. Not only does our public telephone network provide a vital voice, data and video service to our Nation's citizens and businesses, it is the backbone on which the nation's wireless networks also rely. And allows a consumer in a remote part of West Virginia to pick up the phone and reach anyone in the country.

The success of the nation's telephone network was not fortuitous. It came about by a tremendous amount of private investment and innovation and because of sound policy decisions, rooted in the fundamental principles of the Communications Act of 1934, and later the Telecommunications Act of 1996. And as Americans begin to benefit from the next evolution in wireline technology, I remain convinced that smart regulation and strong consumer protection is as necessary today as it was when the Communications Act was passed almost 80 years ago.

Rural consumers should not be left behind in this transition. They must have access to next-generation high-speed broadband services. The need for access to advanced broadband networks throughout the country is one of the reasons I believe it is time to strengthen the E-rate program. As I said last week, basic Internet connectivity is not sufficient to meet our children's 21st century educational needs. Bringing next-generation high-speed broadband to schools and libraries in rural as well as urban areas is essential to affording students access to tomorrow's digital education technologies and services.

As we look to the future, we must make sure that comparable communications services are available at comparable rates for everyone in this country, no matter who they are and no matter where they live. Even as networks evolve and as companies upgrade their technology, the principles undergirding decades of communications law and policy remain. And it will be up to Congress and the states to make sure that all communications companies comply with the underlying foundations of universal access, consumer protection, competition, and public safety enshrined in our nation's communications laws.

I look forward to the testimony from our witnesses today and to their perspectives on the state of wireline communications in the nation, the challenges facing their companies, and how we can achieve our collective goal of bringing advanced communications services to all Americans.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. MARK WARNER TO
JEFF GARDNER

Question 1. With respect to the coming IP transition and advancing technology, which specific requirements from the Telecommunications Act of 1996 are the most important to maintain to ensure fair competition in the marketplace?

Question 1a. For example, the 1996 Act has clear interconnection requirements. Do you believe that these provisions are technology-neutral and should apply in an IP-based network? If not, please explain why not.

Answer. As I stated in my testimony, communications technology and the competitive landscape of the telecommunications industry is changing rapidly. This places tremendous pressure on the regulatory structure to remain sufficiently flexible to adjust to these changes in a timely fashion. As is evidenced by my own company, which is both an incumbent phone company and one of the largest competitive phone companies, the industry structure is increasingly complex with fewer and fewer “one size fits all” solutions. It is therefore essential that we work together to update rules to a pro-consumer, pro-competitive framework for the information age.

As the industry—including wireline, cable and wireless companies—moves forward in its deployment of new IP-based technologies, core policy issues will continue to be important. These include issues such as interconnection, competitive access, transport, privacy, and public safety. As policymakers evaluate the proper regulatory framework for such issues in the course of the IP transition, USTelecom believes it is important to properly balance the policy goals of regulatory parity among competing platforms, promoting investment in next-generation network facilities, avoiding competitive harm, and protecting consumers.

Question 1b. How important is it to maintain the legacy/copper communications network as we transition to IP? If so, for how long? If not, please explain why not.

Answer. As you correctly note, the shift to IP-based services is a transition, not an event; all communications companies are deploying IP in their networks, and the transition is unfolding in different ways and at different times for each provider. For example, various providers are delivering IP-based services over fiber, copper, coaxial cable and wireless facilities. Therefore, it is most important for policymakers to avoid imposing a one-size-fits-all approach to this transition. Rather, policymakers should be focused on facilitating this transition by minimizing regulatory impediments while at the same time ensuring protections for consumers and competition. This balanced approach applies equally to the replacement of copper facilities. To achieve this balance, policymakers and the industry will need to forge a consensus on how we can restructure regulatory obligations in a way that provides consumers and businesses with all the benefits of the Information Age.

Question 2. Reform of the Universal Service Fund (USF)/creation of the Connect America Fund (CAF) is critically important because millions of Americans still lack access to high-speed broadband service in many areas of the country. According to the National Broadband Plan, broadband is available in 98 percent of the nation, but the national adoption rate, according to the National Telecommunications and Information Administration (NTIA) and Census data, is 72 percent. I believe it is important for all Americans to have access to high-capacity broadband service, and therefore, I am focused on policies that help us to reach 100 percent coverage of U.S. households. However, we have a limited amount of money that we can allocate as a nation to rural broadband deployment, and I believe we should prioritize funding to support buildout in unserved areas or areas below 4 mbps down/1 mbps. Typically, these areas are still unserved because of the high cost of deployment and the low population density. Understandably, this makes it difficult for private companies to deploy broadband in these areas, and it is also the reason why policymakers decided to create programs like USF/CAF—to serve hard-to-reach places in the country.

Question 2a. Do you believe CAF is adequately focused on broadband deployment in unserved areas? If so, how long do you think it will take to reach full deployment? If not, please explain what it would take to buildout unserved areas of our country given that we only have approximately \$4.5 billion/year through USF.

Answer. The FCC’s CAF program is limited to larger telecommunications providers known as price cap carriers. The CAF program is focused on supporting the construction and operation of robust broadband and voice networks in areas served by these companies where there is no private business case to provide service. The program properly recognizes that support is necessary in these areas both to build and maintain networks. The program further limits funding to only those areas where there is no unsubsidized competitor.

The cost of full deployment remains unquantified, despite some preliminary efforts made during development of the National Broadband Plan and later by a coalition of price cap companies. Even by the FCC's own rough estimate, reaching all unserved consumers will require much more funding than is currently available in the CAF and may require technologies other than wired broadband. In the absence of a precise estimate, we do not know how long it will take to reach full deployment at the rate of \$4.5 billion a year. It should also be noted that a percentage of that funding will be necessary to sustain operation of the phone network in high-cost areas and also high-cost locations that already have broadband (and will require investment, as network demands have increased steadily year-over-year).

At a high level, the vision of the Connect America Fund is, beginning with a 5-year phase, to deploy 4/1 broadband speeds as widely as possible, given that budget constraint. Areas served by price cap companies that are so remote and costly to serve that they exceed an upper cost threshold that the FCC will establish can receive support under the separate Remote Areas Fund.

Neither USTelecom nor the FCC believes that a 5-year Connect America Fund will address all rural broadband needs in areas served by price cap companies. There are significant issues yet to be resolved with regard to that 5-year phase, as well as what comes next. We appreciate your interest and engagement and will need more of it.

Question 2b. Is the pace of reform moving too slowly?

Answer. Certainly price companies and our customers feel a sense of urgency to extend broadband into more of rural America. Ultimately, reform may produce more investment capital for rural deployment in price cap areas, although many significant issues remain unresolved. We urge the Commission to take the time necessary to do the job right, but we would note that development of CAF-2, the permanent funding model for price cap areas, has fallen behind schedule. Meanwhile, other key aspects of reform have progressed rapidly: The high-cost program is operating on a flat-line budget, and intercarrier compensation is being eliminated. Phasing out the implicit subsidies from intercarrier comp is reducing support for high cost networks, both in price cap and rate-of-return areas, by billions of dollars.

Question 3. Based on my experience in Virginia, it is not possible to deploy fiber absolutely everywhere. Many areas of my state have granite rockbeds, which make it prohibitively expensive to deploy fiber. Therefore, I am supportive of cost effective deployment of broadband technology to reach universal coverage. Although I recognize that the focus of this hearing was on wireline issues, it seems to me that we should consider the best technologies based on our national goal of providing advanced communications services to all Americans.

Question 3a. Should the Federal Communications Commission (FCC) focus more resources on best-available technology for unserved areas or areas below 4/1? If so, please explain what else the FCC could do to improve broadband coverage to unserved areas. If not, please explain how we can reach full broadband deployment by focusing more on fixed services, at a reasonable cost to taxpayers and consumers.

Answer. Every aspect of universal service is resource-constrained, and the FCC has made a commitment to operate within a \$4.5 billion annual budget. In light of the elimination of intercarrier compensation revenues and the formidable amount of work ahead, it is important that support for funding broadband and voice service in high cost areas not be further eroded. The FCC and our industry have focused considerable effort on designing a cost model that will accurately estimate the forward-looking costs of providing broadband service over the most efficient network. That cost model will play an important role in allocating support and ensuring that support is tailored to the costs and obligations of providing robust broadband in high-cost areas. I believe that wireline is the most robust and cost-effective broadband network option in terms of bandwidth, latency, reliability, and scalability for the vast majority of locations in the Nation. That said, USTelecom believes the FCC's plan to support deployment of alternative technologies via a Remote Areas Fund is a practical second-best solution, in light of budget constraints, to reach the very highest-cost locations.

Question 3b. Please describe what role you see for other technologies in terms of serving hard-to-reach areas in the near term. Could we be more technology-neutral in our Federal broadband funding programs?

Answer. As I described in my answer to the previous question, I think there is a role for satellite or fixed wireless in the very highest-cost areas. In addition, the FCC is supporting the provision of mobile service through a separate Mobility Fund. Finally, the FCC is operating in a technology-neutral manner now, as it is planning a competitive bidding process that would be open to all fixed terrestrial technologies, including DSL, fiber, cable, and fixed wireless.

Question 4. Would more targeted broadband mapping—at the address level, specifically—help to accelerate deployment to unserved areas? If not, please explain why less granular data models are sufficient to target deployment to unserved households. Do you believe the current level of data gathered by the National Broadband Map contributes to overbuilding? If not, please explain.

Answer. Accurate data is important to thoughtful policy-making, and USTelecom members, including Windstream, continue to work on providing updated, granular data for inclusion in the National Broadband Map. Given that the NBM is informing important policy decisions, including the distribution of universal service funding, it should be a priority to ensure that broadband service providers are using the same methodologies for submitting data and—in light of the fact that the NBM is based on self-reported data—are providing data that accurately reflects existing service.

As your question recognizes, more targeted reporting would not serve to accelerate deployment in the 95 percent of locations in the U.S. that are already served by fixed broadband. Even in unserved areas of the country, however, targeting broadband mapping at the census block level—the current level of granularity of the NBM—is appropriate. Because broadband service providers base deployment decisions on the costs of multi-location projects or routes, it is not useful to target broadband mapping at the address level. Moreover, requiring the collection of household-level data would place a substantial burden on providers and require them to divert resources toward administrative matters and away from broadband investment, thus undermining the goals of universal broadband availability. Targeting the collection of mapping data on the census block level strikes an appropriate balance, providing sufficiently granular detail while minimizing the burden on providers.

Question 5. As many experts have noted, there is “rural-rural divide” when it comes to the presence of broadband infrastructure in rural America. According to the FCC, more than 83 percent of the approximately 18 million Americans that lack access to residential fixed broadband at or above the basic level of acceptable service outlined in the National Broadband Plan live in areas served by price-cap carriers. The FCC attempted to address this disparity by establishing an incremental support component in the Phase I CAF Fund for price cap carriers. The initial support was established at \$300 million, but more than half of the allocated funds went unclaimed. Different types of carriers have expressed opinions about whether or not it was a good idea for the FCC to set aside this amount of money even though the bulk of the \$4.5 USF program was allocated to other types of carriers.

Question 5a. Regardless of your views on the Phase I Fund, do you think the FCC has done enough to provide coverage to the 14.9 million people who still lack any sort of basic broadband service?

Question 5b. If so, when do you think we can expect to provide broadband service to all Americans? If not, what else could the FCC do to provide universal broadband service?

Answer. See question #2. If I am missing the point of your question, I would be happy to arrange a meeting with you or your staff.

Question 6. There has been a great deal of discussion about the FCC’s models for CAF. Given that technology is advancing at a rapid rate, it seems like the FCC should be focused on establishing a cost model that is updated frequently enough to provide an accurate sense of the marketplace. How important is the timeliness of the FCC’s proposed cost model in delivering service to unserved areas?

Answer. USTelecom has long urged that an essential feature of CAF in general, and of the Connect America Cost Model (CAM) in particular, must be the proper alignment of funding and the service obligations attached to such funding. The FCC’s CAM is timely in that it models the cost that an efficient provider using forward-looking technology would incur to provide robust broadband and voice services. The FCC has correctly adopted a multi-year support period for CAF Phase II, in recognition that few if any carriers would undertake the enormous upfront investment cost of building out a broadband network, especially in rural locations where there is no business case to do so, without a set, multi-year support period. Likewise, it is crucial that carriers have certainty with regard to the amount of funding they will receive over the support period and the obligations attached to such funding. Without such certainty, carriers will be less likely to take on CAF Phase II service commitments, which would undermine the goal of delivering service to unserved areas.

USTelecom agrees that the CAM should provide an accurate sense of the marketplace and the cost of serving high-cost areas, and we have been working with the FCC to ensure that the CAM achieves these objectives. It is our belief that a CAM that provides certainty with regard to support amounts over a multi-year period,

rather than a CAM that is updated frequently, is most appropriately aligned with the realities of network-building and most likely to result in the deployment of broadband service in unserved areas.

Question 6a. Do you agree with the revisions the FCC has made to its cost model? Does the cost model accurately predict needs/services under CAF? If not, or if you believe the FCC model should lock in rates for a longer period of time, please explain how a longer view would deliver broadband to unserved areas more quickly than an annualized model.

Answer. The development of the CAM is still underway, with many key decisions as yet unmade. Therefore, while we are working with the FCC and other interested parties to ensure that the various components of the CAM work together to accurately predict the costs of serving high-cost areas, it is too soon to say whether the CAM does or does not do so.

As noted above, USTelecom believes the FCC correctly adopted a multi-year support period for CAF Phase II; in fact, USTelecom member companies advocated for a longer support period than the one ultimately adopted by the FCC because a longer support period more accurately reflects the sunk-cost nature of much network investment in providing broadband services. Carriers must undertake an enormous upfront investment cost to build out a broadband network, especially in rural and high-cost locations where there is no business case to do so. The longer the guaranteed period of support, the more likely carriers are to assume those massive costs. Conversely, an annualized model, which would not provide carriers with certainty regarding the support they will receive to underwrite these investments, would make carriers less likely to undertake the deployment of broadband in high-cost areas. In this way, a longer view will deliver broadband to unserved areas more quickly than an annualized model.

Question 7. A report by the nonpartisan Congressional Research Service analysis captures one of the major challenges of USF reform as follows:

“Smaller, rural, rate-of-return carriers are particularly dependent on USF subsidies, and have expressed concern that the reforms that the USF Order will implement could place them under financial hardship. Many RUS telecommunications and broadband borrowers (loan recipients) receive high cost USF subsidies. In many cases, the subsidy received from USF helps provide the revenue necessary to keep the loan viable. The Telecommunications Infrastructure Loan program is highly dependent on high-cost USF revenues, with 99 percent (476 out of 480 borrowers) receiving interstate high-cost USF support. This is not surprising, given that the RUS Telecommunications Loans are available only to the most rural and high-cost areas (towns with populations less than 5,000). Regarding broadband loans, 60 percent of BIP (stimulus) borrowers draw from state or interstate USF support mechanisms, while 10 percent of farm bill (Rural Broadband Access Loan and Loan Guarantee Program) broadband borrowers receive interstate high-cost USF support. Thus, to the extent that USF may be reformed, this could have an impact on the viability of RUS telecommunications and broadband loans, and ultimately the overall financial health of the carrier.

Although the FCC included a waiver process in its USF Order for those carriers that felt they would be subject to significant economic stress, due to the reforms, many smaller carriers assert that the waiver process is too burdensome and difficult and that the requirements for qualifying for relief are too restrictive.”

Additionally, according to the U.S. Department of Agriculture, demand for RUS loan funds was only 37 percent of loan funds appropriated by Congress in FY2012. This is indicative of the fact that the restructuring and uncertainty around USF/CAF reform could diminish the desirability of RUS broadband loans to borrowers going forward.

Question 7a. Given that the RUS and USF broadband programs share the goal of deploying broadband to rural America, and many RUS borrowers appear to be significant beneficiaries of USF as well, are these programs effectively targeted towards providing broadband to unserved areas of the nation?

Question 7b. Are these programs the most cost-effective way for Congress to fund rural broadband development? If so, please explain why. If not, please share any ideas you may have regarding a more cost-effective approach to encouraging broadband deployment.

Question 7c. Given that these two programs (USF and RUS) share the same goals, to what extent are they duplicative and to what extent are they complementary?

Question 7d. Do you think that the FCC waiver process, as designed and described above, is appropriate? If so, why? If not, what changes would you recommend?

Answer. Because Windstream is a price-cap carrier and this question pertains to rate-of-return carriers, I have asked Walter McCormick, President and CEO of the USTelecom Association, to respond for the Association and respectfully request that his answer be incorporated into the record.

[Mr. McCormick's answer follows:]



October 2, 2013

The Honorable Mark Warner
475 Russell Senate Office Building
United State Senate
Washington, DC 20510

Dear Senator Warner:

On behalf of the United States Telecom Association, I am pleased to provide my response to question number seven, which you originally presented to Jeff Gardner, President & CEO of Windstream Corporation, in his capacity as Chairman of the Board of Directors of USTelecom, as part of a package of questions for the record following the Communications Subcommittee's July 25, 2013 hearing on "The State of Wireline Communications."

7. A report by the nonpartisan Congressional Research Service analysis captures one of the major challenges of USF reform as follows:

"Smaller, rural, rate-of-return carriers are particularly dependent on USF subsidies, and have expressed concern that the reforms that the USF Order will implement could place them under financial hardship. Many RUS telecommunications and broadband borrowers (loan recipients) receive high cost USF subsidies. In many cases, the subsidy received from USF helps provide the revenue necessary to keep the loan viable. The Telecommunications Infrastructure Loan program is highly dependent on high-cost USF revenues, with 99% (476 out of 480 borrowers) receiving interstate high-cost USF support. This is not surprising, given that the RUS Telecommunications Loans are available only to the most rural and high-cost areas (towns with populations less than 5,000). Regarding broadband loans, 60% of BIP (stimulus) borrowers draw from state or interstate USF support mechanisms, while 10% of farm bill (Rural Broadband Access Loan and Loan Guarantee Program) broadband borrowers receive interstate high-cost USF support. Thus, to the extent that USF may be reformed, this could have an impact on the viability of RUS telecommunications and broadband loans, and ultimately the overall financial health of the carrier.

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stress, due to the reforms, many smaller carriers assert that the waiver process is too burdensome and difficult and that the requirements for qualifying for relief are too restrictive.”

Additionally, according to the U.S. Department of Agriculture, demand for RUS loan funds was only 37% of loan funds appropriated by Congress in FY2012. This is indicative of the fact that the restructuring and uncertainty around USF/CAF reform could diminish the desirability of RUS broadband loans to borrowers going forward.

- a. **Given that the RUS and USF broadband programs share the goal of deploying broadband to rural America, and many RUS borrowers appear to be significant beneficiaries of USF as well, are these programs effectively targeted towards providing broadband to unserved areas of the nation?**

Absolutely. Funding that small rural telecom companies receive from the Universal Service High Cost Program offset the much higher than average operating costs of providing telecommunications services to rural America, where the lack of subscriber density leads to significantly increased costs. High-cost funding is just one element of a typical small company revenue stream that also includes subscriber revenues and intercarrier compensation. However, these small rate-of-return regulated telecom carriers, serving more than 40% of the nation's land mass, have also made a commitment to deploying advanced services to their communities and use a limited number of public and private loan programs to finance long-term capital investments to expand the reach and effectiveness of broadband in hard-to-serve rural areas.

The problem is not whether the USF and RUS programs are effectively targeted towards providing broadband to unserved areas. Potential borrowers and lending institutions are currently hesitant to move forward with loans for broadband infrastructure improvements due to the uncertainties created by the USF Reform Order as it applies to small rural telecom companies. The Order is creating uncertainty in the high-cost revenue stream of small companies and no prudent business or lender will apply for or make loans under such conditions. For this reason, USTelecom has been calling upon the Commission to find a way to re-establish predictability, sufficiency and transparency in the USF program through re-examination of the process used to provide high-cost funding to small companies and other common-sense steps that enable rural carriers to respond to consumer demand for broadband.

b. Are these programs the most cost-effective way for Congress to fund rural broadband development? If so, please explain why. If not, please share any ideas you may have regarding a more cost-effective approach to encouraging broadband deployment.

The targeted assistance offered by RUS infrastructure programs remains essential to a healthy and growing rural telecommunications industry that contributes to the provision of universal voice and broadband service. Access to a reliable source of capital such as the RUS loan programs is key to the system upgrades which will enable rural areas served by small companies to experience the economic growth and job creation that widely available and reasonably priced voice and broadband service can provide. RUS is a brilliantly conceived public-private partnership in which the borrowers are the conduits for the federal government benefits that flow to rural telecom customers, the true beneficiaries of the RUS program. The government's contribution is leveraged by the equity, technical expertise and dedication of local telecom companies. RUS is the ideal government program – it provides incentives where the market does not for private companies to invest in infrastructure which promotes needed rural economic development. It allows residents, anchor institutions and businesses to have access to life-changing voice and broadband services, and the RUS infrastructure program both operates at a profit and has never lost a nickel of taxpayer money because of a telecom carrier default.

Similarly, an efficient and effective Universal Service High Cost Program administered by the Federal Communications Commission is indispensable to allowing the small, rate-of-return telecom companies that serve 40 percent of the land mass of rural America to be able to provide essential voice and broadband services in their service areas and to operate on a sound financial basis. Unfortunately, the FCC's 2011 changes to USF for rate-of-return companies did not significantly update the old small company USF mechanisms for the broadband world. Instead, the changes added new caps, regulations and requirements, introducing substantial regulatory and financial uncertainty into long-term investment decisions. Providing rural telecom is a capital-intensive undertaking, with facilities expected to continue providing service for 20 to 30 years. Further, the changes did not provide support for lines over which the customer purchases broadband service, but obtains voice from another provider (for example an "over-the-top" service such as Vonage or a wireless company). The FCC should recognize the connection between the decline in rate-of-return broadband investment and its 2011 changes to the USF rules. It should then proactively develop a comprehensive list of expedited actions it can take to reverse the trend of disinvestment in broadband infrastructure in rural, rate-of-return company areas. Those actions should include steps to increase regulatory certainty and fund broadband-only lines.

c. Given that these two programs (USF and RUS) share the same goals, to what extent are they duplicative and to what extent are they complementary?

We concur with the Congressional Research Service's (CRS) analysis cited above concerning the major challenges of USF Reform. We would also point the Committee toward other important work CRS has done in this area including an excellent analysis of the complementary nature of the RUS and USF programs:

"The RUS broadband programs and the FCC's Universal Service Fund (USF) share a common goal: increasing broadband infrastructure deployment and applications in rural areas. However, the way that each program addresses these goals is markedly different. RUS grants and loans are used as up-front capital to invest in broadband infrastructure, whereas the USF provides ongoing subsidies to keep the operation of telecommunications—and most recently broadband networks in high-cost areas—economically viable for providers. These subsidies, in turn, enable providers to invest in upgrading their telephone networks to make them broadband-capable."¹

Moreover, the fairly-priced loans provided via the RUS infrastructure program at a profit to the federal government reduce the costs of building out voice and broadband service in rural America, thereby reducing the amount of USF support that would otherwise be required by small, rate-of-return telecom companies.

d. Do you think that the FCC waiver process, as designed and described above, is appropriate? If so, why? If not, what changes would you recommend?

Among the changes the FCC made to the high-cost USF program for small, rate-of-return companies was the initiation of the Quantile Regression Analysis (QRA) cap on that USF support. The QRA was intended, first, to reduce support provided to companies that "overinvested," second, provide incentives for companies to be more efficient, and third, provide incentives for greater broadband deployment. But as implemented, the QRA introduced substantial regulatory and financial uncertainty into long-term investment decisions, did not provide incentives for efficiency, and actually created disincentives for small companies to invest in deploying broadband facilities.

¹ Angele A. Gilroy and Lennard G. Kruger, *Rural Broadband: The Roles of the Rural Utilities Service and the Universal Service Fund*, (CRS R42524, June 29, 2012), pg. 18.

The QRA is a mathematical model designed to look backward. It uses a complex and opaque formula to basically second guess investments that have already been made. The QRA suffers from fundamental policy problems. First, because it is calculated each year, it compares each small company to all other small companies, thereby forcing each company to decide whether to invest based not on whether it makes good business sense, but on game theory – how that company’s actions will compare to actions taken by all other small companies. As a result, companies are incented to “race to the bottom” – that is, make sure their costs and investment go down faster than all the others. This is no way to encourage broadband investment. Further, the QRA also introduces enormous uncertainty, in that it is very difficult for a company to predict whether its universal service support could be reduced in the future.

Many of the factual inputs to the QRA are not completely accurate, particular for the low-density rural areas served by small companies. For a company serving a discrete geographic area, this could severely distort its QRA numbers and unfairly reduce the amount of USF it receives. And even accurate inputs, such as state tax rates, unfairly discriminate against some companies by punishing them for have a cost of doing business that is outside of their control.

Small companies may submit waiver requests to address these issues, and such waivers, based on factual issues, should be thoroughly and quickly addressed. No policy calls are involved in the FCC’s adjudicatory process. Unfortunately, to this date, the FCC has not processed waivers as thoughtfully and expeditiously as it should and could. Further, it should take steps to reduce the need for small companies to spend very large amounts of money to develop a waiver request.

Also, there appears to be an unfortunate lack of coordination between RUS and USF with regard to the FCC’s consideration of waiver requests. In the FCC’s July 15 Order addressing the waiver request of a small company in Alaska, AEE, the FCC included the following footnote, “We note that AEE has an outstanding loan with RUS and has argued that, without a waiver, the company will ‘default on its RUS loans’ at a cost of ‘millions’ of dollars. See AEE Petition at ii. However, even in the event that AEE were to default on its RUS loan, this cost would be far more than offset by savings to the USF.” In response, in an August 14, 2013 ex-parte communication to the Commission, RUS Padalino stated, “We believe that in instances where Federal debt is at risk due to a denied waiver, RUS should be given deference during that decision-making process.”

I hope that you find this information to be fully responsive to question 7.

Sincerely,



Walter B. McCormick, Jr.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. MARK WARNER TO
SHIRLEY BLOOMFIELD

Question 1. With respect to the coming IP transition and advancing technology, which specific requirements from the Telecommunications Act of 1996 are the most important to maintain to ensure fair competition in the marketplace?

Question 1a. For example, the 1996 Act has clear interconnection requirements. Do you believe that these provisions are technology-neutral and should apply in an IP-based network? If not, please explain why not.

Question 1b. How important is it to maintain the legacy/copper communications network as we transition to IP? If so, for how long? If not, please explain why not.

Answer. NTCA—The Rural Broadband Association (“NTCA”) filed an “IP Evolution” Petition with the Federal Communications Commission (“FCC”) arguing precisely that certain fundamental statutory principles transcend mere technology transitions and should therefore be promoted and sustained regardless of the protocols used within underlying communications networks. A copy of that Petition, as filed in November 2012, can be found in the attachment titled “*Petition of the National Telecommunications Cooperative Association for a Rulemaking to Promote and Sustain the Ongoing TDM to IP Evolution*.” It explains how the FCC should undertake a thoughtful and comprehensive review to modernize its regulations in light of technology transitions—but only against a statutory backdrop that above all else: (1) preserves and advances universal service; (2) promotes competition, and (3) ensures consumer protection (which includes the need for reliable service quality and access to public safety emergency services). This review would include not the narrow question of how to sustain technology neutral interconnection requirements between carriers consistent with the Communications Act of 1934, as amended (the “Act”), but also a broader consideration of what additional steps are needed to ensure that there is sufficient and predictable universal service support so that all Americans—including those in high-cost areas and low-income consumers—can enjoy meaningful access to sustainable IP-enabled, broadband-capable services at affordable rates.

Question 2. Reform of the Universal Service Fund (USF)/creation of the Connect America Fund (CAF) is critically important because millions of Americans still lack access to high-speed broadband service in many areas of the country. According to the National Broadband Plan, broadband is available in 98 percent of the nation, but the national adoption rate, according to the National Telecommunications and Information Administration (NTIA) and Census data, is 72 percent. I believe it is important for all Americans to have access to high-capacity broadband service, and therefore, I am focused on policies that help us to reach 100 percent coverage of U.S. households. However, we have a limited amount of money that we can allocate as a nation to rural broadband deployment, and I believe we should prioritize funding to support buildout in unserved areas or areas below 4 mbps down/1 mbps. Typically, these areas are still unserved because of the high cost of deployment and the low population density. Understandably, this makes it difficult for private companies to deploy broadband in these areas, and it is also the reason why policymakers decided to create programs like USF/CAF—to serve hard-to-reach places in the country.

Question 2a. Do you believe CAF is adequately focused on broadband deployment in unserved areas? If so, how long do you think it will take to reach full deployment? If not, please explain what it would take to buildout unserved areas of our country given that we only have approximately \$4.5 billion/year through USF.

Question 2b. Is the pace of reform moving too slowly?

Answer. The Connect America Fund (“CAF”) is a program intended by the FCC to implement the high-cost universal provisions of Section 254(b)(3) of the Act, which requires among other things that:

Consumers in all regions of the Nation, including low-income consumers and those in rural, insular, and high cost areas, should have access to telecommunications and information services, including interexchange services and advanced telecommunications and information services, that are reasonably comparable to those services provided in urban areas and that are available at rates that are reasonably comparable to rates charged for similar services in urban areas.

Section 254(b)(5) further compels that “[t]here should be specific, predictable and sufficient Federal and State mechanisms to preserve and advance universal service.”

Thus, universal service—and by extension, the CAF—must not be merely about “*getting* services out there” to *unserved* areas. Instead, by Congressional mandate, any universal service program must also seek to “preserve and advance universal service” by *keeping* services in *all* areas of the United States, and by making sure

that those services are and remain affordable. Universal service will fail in the long-run—and the investments used to deploy broadband will be inefficient or even wasted—if there is not a co-equal focus on sustainability as compared to merely reaching unserved areas in the first instance. More specifically, if networks are built, but services on them are unaffordable or do not remain “reasonably comparable” to services available in urban areas over time, then universal service has failed.

Particularly given that broadband speeds are evolving and increasing, it is important that the high-cost USF program continue to be seen—as it was until the past few years—as both an “availability” and “adoption” program that helps to justify both the deployment of networks and then the use of services on them by consumers. A network that is built merely to meet 4/1 Mbps speeds today will become quickly outdated; the FCC has acknowledged this in indicating that CAF Phase II recipients will be required to ensure that their networks are capable of offering 6/1.5 Mbps speeds in several years. Unfortunately, it appears that even 6/1.5 Mbps speeds are already surpassed, as studies (including the “State of the Internet” report published regularly by Akamai) indicate that the average nationwide use of broadband is already in excess of this speed threshold. Moreover, given that networks are built to last for twenty years or longer—and given that it takes at least this long to recover the costs of deploying a network in sparsely populated, high-cost rural areas—a forward-looking and efficient universal service policy should aim to deploy *and* maintain/sustain networks that will be capable of delivering “reasonably comparable” speeds for the next several decades in lieu of clinging to quickly surpassed arbitrary speed targets.

Such efforts will almost certainly require more resources in the end than the \$4.5 billion available under the FCC’s “budget target” for high-cost universal service through 2017. Yet the fact remains that small rural carriers, such as those within NTCA’s membership, have already made “commendable” strides (according to the Federal-State Joint Board on Universal Service) in deploying broadband, even as their use of high-cost USF support grew only roughly equal to the historic pace of inflation (3 percent per year, per FCC Order 11–161). It is also worth noting that the “budget” risk in the high-cost USF program was ultimately “a solution in need of a problem” since, once again per FCC Order 11–161, the overall high-cost program budget had *been declining slightly* for years, *even in advance of the FCC’s 2011 reforms*.

Unfortunately, with uncertainty arising out of the FCC’s 2011 order—specifically as a result of the “Quantile Regression Analysis” caps and the threat of more cuts to come in a further notice of proposed rulemaking—many small carriers have been forced to put their investments on hold. A NTCA survey in early 2013 indicated that out of more than one hundred small carriers responding, nearly 70 percent had postponed or cancelled broadband network deployment projects specifically due to regulatory uncertainty arising out of the FCC’s reforms and the threat of further cuts to come.

Thus, while more remains to be done to achieve truly universal broadband, if regulatory certainty can be restored and a more sufficient and predictable support mechanism put into place, it may be possible on a reasonable budget that includes some reflection of the fact that costs are subject to inflation over time—particularly labor costs that represent the overwhelming portion of network deployment costs—to re-commence the “edging out” of broadband in rural areas that smaller carriers had been making prior to the FCC’s reforms, and to thereby achieve nearly universal broadband deployment over the course of time.

Question 3. Based on my experience in Virginia, it is not possible to deploy fiber absolutely everywhere. Many areas of my state have granite rockbeds, which make it prohibitively expensive to deploy fiber. Therefore, I am supportive of cost effective deployment of broadband technology to reach universal coverage. Although I recognize that the focus of this hearing was on wireline issues, it seems to me that we should consider the best technologies based on our national goal of providing advanced communications services to all Americans.

Question 3a. Should the Federal Communications Commission (FCC) focus more resources on best-available technology for unserved areas or areas below 4/1? If so, please explain what else the FCC could do to improve broadband coverage to unserved areas. If not, please explain how we can reach full broadband deployment by focusing more on fixed services, at a reasonable cost to taxpayers and consumers.

Question 3b. Please describe what role you see for other technologies in terms of serving hard-to-reach areas in the near term. Could we be more technology-neutral in our Federal broadband funding programs?

Answer. As noted in a prior response, small carriers, such as those in NTCA’s membership, have made “commendable” strides according to Federal and state regu-

lators in deploying broadband in hard-to-serve rural areas. Still, there is more clearly to be done to upgrade many of those networks to ensure they remain “reasonably comparable” over time with services available in urban areas. To date, NTCA members have utilized every possible tool available to them to provide broadband, leveraging a mix of fiber and copper, coaxial cable, and wireless technologies to reach consumers. In fact, NTCA estimates that nearly half of its members hold some spectrum assets, and it is our understanding that some of those carriers have used fixed wireless to reach some portion of their customers where other technologies were not yet feasible.

This being said, it remains clear that fiber networks remain the best, most efficient option to achieve true universal service in the long-run—that is, to ensure that all Americans have access to reasonably comparable service at reasonably comparable rates. Copper networks installed in rural areas decades ago during the transition from party-line to single-line telephone service are in many cases long past their useful life, and as those networks deteriorate, consumers run the risk of losing access even to *voice* service, never mind obtaining access to reasonably comparable broadband. And while fixed wireless may be an option in certain cases to help deploy broadband, it is worth noting that many fixed wireless solutions do *not* enable *voice* service; in fact, many fixed wireless providers specifically disavow the offering of voice services. Similarly, satellite services present significant limitations in the carriage of real-time voice traffic, and NTCA understands that capacity limitations are even precluding the placement of new orders now for satellite broadband in wide swaths of rural America. Thus, while each of these technologies could represent niche parts of a comprehensive national solution, the fact remains that the only reliable means of offering both voice services and ensuring “reasonably comparable” broadband in rural areas is through the deployment and ongoing operation of robust, fixed networks.

Just as the nation committed to wiring all of America to ensure rural electrification and rural telephony decades ago, it should recommit to re-wiring America now—over time if needed to help manage within reasonable “budget targets”—to ensure that the statutory mandate of universal service is served in an IP-enabled era.

Question 4. Would more targeted broadband mapping—at the address level, specifically—help to accelerate deployment to unserved areas? If not, please explain why less granular data models are sufficient to target deployment to unserved households. Do you believe the current level of data gathered by the National Broadband Map contributes to overbuilding? If not, please explain.

Question 4a. While the collection of address level data is a laudable goal, the implementation on a nationwide basis would be extremely difficult for a number of reasons. First of all, not every home in the country actually has a street address. Many homes located in rural areas have post office boxes and not street addresses. Additionally, wireless providers who claim to serve an entire area would be unable to tie their coverage with an actual street address. Finally, the sheer amount of data needed to accomplish this goal on a nationwide basis would likely overwhelm the programs used to run the mapping tools. The FCC recently took over the mapping initiative and there are concerns about their ability to maintain the detail needed.

Answer. Networks are not built address-by-address or customer-by-customer. Particularly in a broadband world, there are aggregation points and middle mile connections that link entire rural communities “back to the Internet.” Thus, while better mapping to understand what providers operate where and which services they actually offer could be helpful in guiding Federal policy, such mapping cannot play an exclusive or dispositive role in deciding where and to what degree to provide universal service support in a given area. For example, while multiple providers may provide broadband in a given area, only one may be offering voice service and, moreover, a “broadband coverage map” will not yield any information that indicates whether the *rates* for voice and broadband are “reasonably comparable” for purpose of actually carrying out the statutory mandates of universal service.

NTCA has filed extensive comments at the FCC on the proper role of mapping in guiding universal service policy, and raising concerns with respect to the accuracy of the maps as they might be utilized to inform USF support decisions. In particular, NTCA has noted that the states—given their proximity to the consumer and better awareness generally of competitive and marketplace conditions “on the ground”—should play a more prominent role in helping to identify what areas are truly unserved or served by multiple providers. *Examples of such comments can be found in the attached Comments of NTCA et al., dated March 28, 2013 and Comments of NTCA et al., dated January 9, 2013.*

Question 5. As many experts have noted, there is “rural-rural divide” when it comes to the presence of broadband infrastructure in rural America. According to

the FCC, more than 83 percent of the approximately 18 million Americans that lack access to residential fixed broadband at or above the basic level of acceptable service outlined in the National Broadband Plan live in areas served by price-cap carriers. The FCC attempted to address this disparity by establishing an incremental support component in the Phase I CAF Fund for price cap carriers. The initial support was established at \$300 million, but more than half of the allocated funds went unclaimed. Different types of carriers have expressed opinions about whether or not it was a good idea for the FCC to set aside this amount of money even though the bulk of the \$4.5 USF program was allocated to other types of carriers.

Question 5a. Regardless of your views on the Phase I Fund, do you think the FCC has done enough to provide coverage to the 14.9 million people who still lack any sort of basic broadband service?

Question 5b. If so, when do you think we can expect to provide broadband service to all Americans? If not, what else could the FCC do to provide universal broadband service?

Answer. Interestingly, the “rural-rural divide” notion fails to take into account that, even as small carriers have made “commendable” strides to deploy broadband in high-cost areas as noted in prior answers, many Americans living in rural areas served by those small carriers still lack access to even 4/1 Mbps broadband. Thus, while these customers may have access to some very basic levels of broadband because of the hard work of the small carriers that serve them and public-private partnerships made possible through USF, the fact remains that more remains to be done in *all* rural areas—both those served by larger carriers and those served by smaller carriers—to realize sustainable universal service in which all consumers have access to reasonably comparable broadband at reasonably comparable rates.

There is also increasing concern that a misplaced focus on a perceived “rural-rural divide” will result in missing the much more concerning gap arising between rural and urban areas generally. As the National Telecommunications and Information Administration and the Economic and Statistics Administration of the Department of Commerce highlighted in their joint June 2013 report entitled “Exploring the Digital Nation: America’s Emerging Online Experience,” broadband adoption in rural areas trails adoption in urban areas by a substantial degree (72 percent in urban areas; 58 percent in rural areas). Without sufficient USF support to help ensure that *sustainable* rural broadband is available *and* to help ensure that the prices for broadband access in high-cost areas are and remain reasonably comparable, it will become only more difficult over time to overcome this growing and troubling “rural-urban divide.”

As for whether the FCC has done enough to provide coverage to those who lack access to any sort of basic broadband in rural areas, it is simply too soon to tell whether the CAF Phase I program (and certainly the CAF Phase II program) will ultimately succeed in actually enabling better access to broadband in areas served by larger companies—and whether that access is sustainable over time. It is clear, however, that in areas served by smaller carriers such as those within NTCA’s membership, the effect of the reforms—as explained in prior answers—has been to put much of the investment in more broadband-capable networks on hold as carriers sort through the byzantine “Quantile Regression Analysis” caps or await the prospect of further cuts to USF support through the FCC’s further notice of proposed rulemaking.

In the wake of the 2011 reforms, NTCA has presented to the FCC several different ways in which it could create regulatory certainty and build a broadband future in which “universal broadband service” comes closer to realization across *all* of rural America. Of particular note, NTCA has made a number of filings and has had productive conversations with FCC staff in recent months regarding the creation of a Connect America Fund for areas served by smaller companies—a support mechanism that would enable the deployment and upgrade/maintenance of sustainable broadband-capable networks regardless of whether consumers choose to buy regulated voice service on any given line—and also regarding replacements for the “Quantile Regression Analysis” caps that would remove the complex retroactive impacts of those caps while still meeting the FCC’s desire for additional fiscal responsibility measures in the context of small carriers’ USF distribution mechanisms. *Details regarding these proposals and ongoing discussions with the FCC regarding consideration of these issues can be found in the following attached documents: Comments of NTCA et al., dated June 17, 2013, Reply Comments of NTCA et al., dated July 15, 2013, and Ex Parte Letter from NTCA dated September 12, 2013.*

Question 6. There has been a great deal of discussion about the FCC’s models for CAF. Given that technology is advancing at a rapid rate, it seems like the FCC

should be focused on establishing a cost model that is updated frequently enough to provide an accurate sense of the marketplace.

Question 6a. How important is the timeliness of the FCC's proposed cost model in delivering service to unserved areas?

Question 6b. Do you agree with the revisions the FCC has made to its cost model? Does the cost model accurately predict needs/services under CAF? If not, or if you believe the FCC model should lock in rates for a longer period of time, please explain how a longer view would deliver broadband to unserved areas more quickly than an annualized model.

Answer. The cost model currently under consideration for CAF by the FCC does not apply to small, rate-of-return-regulated carriers pursuant to the terms of FCC order 11–161. Instead, the CAF model currently being developed for implementation is applicable by FCC rule and order only to larger, price cap-regulated carriers. NTCA has, however, submitted several rounds of comments to the FCC regarding the model, noting many of the ways in which it would need to be reviewed and modified to provide a potential alternative means by which smaller carriers could voluntarily seek distribution of USF support. *These observations can be found in the June 17, 2013 Comments, the July 15, 2013 Reply Comments, and the September 12, 2013 Ex Parte letter noted in the prior answer and attached hereto.*

As noted in prior answers, there is not yet a Connect America Fund for areas served by smaller carriers, although NTCA continues to engage in productive conversations with the FCC regarding the development of such a program tailored for the unique challenges faced by smaller carriers that operate exclusively in rural, high-cost areas.

Beyond these general clarifications regarding the inapplicability of the model to small carrier operations today and the need for substantial modifications to the extent a model of some kind might be used by smaller carriers on a voluntary basis at some future point to obtain USF support, NTCA cannot speak to the questions of how the model might spur—or fail to spur—delivery of broadband services to rural areas served by price cap-regulated carriers. NTCA notes once again, however, that it is essential (and required by statutory universal service mandate) that the problem to solve is not viewed merely as a one-time challenge of “delivering” broadband to unserved areas; rather, the question to address must also examine the extent to which USF/CAF resources can help promote *sustainable* broadband-capable networks and affordable services throughout *all* rural areas.

Question 7. A report by the nonpartisan Congressional Research Service analysis captures one of the major challenges of USF reform as follows:

“Smaller, rural, rate-of-return carriers are particularly dependent on USF subsidies, and have expressed concern that the reforms that the USF Order will implement could place them under financial hardship. Many RUS telecommunications and broadband borrowers (loan recipients) receive high cost USF subsidies. In many cases, the subsidy received from USF helps provide the revenue necessary to keep the loan viable. The Telecommunications Infrastructure Loan program is highly dependent on high-cost USF revenues, with 99 percent (476 out of 480 borrowers) receiving interstate high-cost USF support. This is not surprising, given that the RUS Telecommunications Loans are available only to the most rural and high-cost areas (towns with populations less than 5,000). Regarding broadband loans, 60 percent of BIP (stimulus) borrowers draw from state or interstate USF support mechanisms, while 10 percent of farm bill (Rural Broadband Access Loan and Loan Guarantee Program) broadband borrowers receive interstate high-cost USF support. Thus, to the extent that USF may be reformed, this could have an impact on the viability of RUS telecommunications and broadband loans, and ultimately the overall financial health of the carrier.

Although the FCC included a waiver process in its USF Order for those carriers that felt they would be subject to significant economic stress, due to the reforms, many smaller carriers assert that the waiver process is too burdensome and difficult and that the requirements for qualifying for relief are too restrictive.”

Additionally, according to the U.S. Department of Agriculture, demand for RUS loan funds was only 37 percent of loan funds appropriated by Congress in FY2012. This is indicative of the fact that the restructuring and uncertainty around USF/CAF reform could diminish the desirability of RUS broadband loans to borrowers going forward.

Question 7a. Given that the RUS and USF broadband programs share the goal of deploying broadband to rural America, and many RUS borrowers appear to be

significant beneficiaries of USF as well, are these programs effectively targeted towards providing broadband to unserved areas of the nation?

Answer. Although FCC order 11-161 has been perceived as “modernizing” the fund to allow more companies to invest in broadband-capable networks in rural areas, as noted in prior answers: (1) smaller carriers, such as those in NTCA’s membership, have already leveraged USF support for years to make “commendable” progress in deploy multi-use, broadband-capable networks (although more remains to be done); and (2) FCC order 11-161 did *not* create a Connect America Fund for smaller carriers. As noted in prior answers, small carriers and their representatives are currently working with the FCC to address these issues and to determine what additional steps might be taken to implement a CAF that promotes sustainable upgrades to broadband networks in areas served by smaller carriers as well, and we remain hopeful that such discussions will yield productive results.

Rural Utilities Service (“RUS”) financing and USF programs play a complementary role in supporting the deployment and sustainability of broadband-capable networks in rural areas. Much like a commercial lender, RUS provides reasonable access to capital—but unlike many commercial lenders, RUS is willing to do so (and charged by statute to do so) in some of the most challenging reaches of the United States. The high-cost USF program, in turn, helps to ensure that consumers can pay “reasonably comparable” rates for “reasonably comparable” services on the networks that RUS (and only a small handful of other commercial lenders) help to finance in the first instance. In this regard, it is once again important to recall that USF is much more—by law—than an “availability” program; instead, the high-cost USF program is in many respects an “adoption” program, helping to ensure that rates for services on networks in rural areas are not unaffordable.

Thus, the RUS financing programs and the high-cost USF program play two very different, but complementary and very important, roles in promoting and sustaining rural broadband.

Question 7b. Are these programs the most cost-effective way for Congress to fund rural broadband development? If so, please explain why. If not, please share any ideas you may have regarding a more cost-effective approach to encouraging broadband deployment.

Answer. These programs are extremely cost-effective. In fact, the RUS traditional telecommunications loan program is what is commonly known as a “super program.” It is one of the few government programs that actually pays down the deficit by returning funds to the U.S. Treasury when loans are repaid. Meanwhile, as noted in prior answers, the high-cost USF program overall had a slightly declining “budget” for several years *even before the reforms in 2011*, and the portion of high-cost support received by smaller carriers was increasing by only 3 percent per year on average leading up to those reforms even as these rural providers edged out broadband to more than 92 percent of their consumers. Thus, at least prior to the 2011 reforms, both programs represented rare and remarkable successes in policy—yielding funds back to the American taxpayer while promoting broadband investment (in the form of the RUS programs) and helping to justify such investments and the ongoing provision of affordable rates for broadband to consumers (in the form of the high-cost USF programs).

Question 7c. Given that these two programs (USF and RUS) share the same goals, to what extent are they duplicative and to what extent are they complementary?

Answer. As noted above, the two programs are not at all duplicative; they are instead entirely complementary. The high-cost portion of the USF is designed to be part of a revenue base to allow companies to operate in areas where it would otherwise be uneconomical to operate, and to keep consumer rates “reasonably comparable” in such hard-to-serve. As stated in Section 254 of the Act, it was the policy of Congress to attempt to equalize the cost and availability for advanced telecommunications services for all parts of the country, regardless of where someone lived.

On the other hand, the Rural Utilities Service, initially through the Rural Electrification Administration, has helped to provide capital financing for the build-out first of basic telephone networks across the country. Moreover, many years ago (well before the 2011 FCC reforms), the RUS adopted a forward-looking policy of ensuring that the networks it financed—given that they would be in place and the costs of them recovered over decades to come—should be broadband-capable, thereby representing an “early adoption” of focusing deployment on future-proof networks on which consumers could receive advanced services.

Question 7d. Do you think that the FCC waiver process, as designed and described above, is appropriate? If so, why? If not, what changes would you recommend?

Answer. The process by which a carrier can obtain relief from certain of the reforms in FCC order 11–161 remains problematic. Initially, under the 2011 order, a consumer could see an unreasonable increase in broadband rates, degradation in broadband speeds or service quality, or even lose access to broadband service altogether as a result of a FCC rule change, and yet no waiver would be available. In its Fifth Order of Reconsideration, however, the FCC confirmed that these too could be factors justifying the grant of a waiver, and the agency also took certain other steps to relieve some (but not all) of the burdens associated with obtaining a waiver.

The FCC has touted the waiver process as an important safety valve where the reforms are having the effect of undermining, rather than promoting, universal service. Unfortunately, even in the wake of the Fifth Order on Reconsideration, waivers continue to take incredibly long periods of time to address, cost carriers large amounts of money to seek, and, to date, we have seen little, if any, improvement in the process or the outcomes. If the waiver process is to be cited as the last line of defense for universal service, it needs marked improvement—and it should be clear in the first instance that any universal service program that relies as much as the current system on a protracted and opaque waiver process raises serious concerns in light of the statutory requirement that USF support must be specific, predictable, and sufficient.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. MARK BEGICH TO
SHIRLEY BLOOMFIELD

Question 1. Thank you for your testimony. The recent FCC order released on July 26, 2013 provided a reprieve from FCC and USF changes and was a positive step for Alaska. However, how does the FCC's order resolve the underlying problems associated with the USF/ICC Transformation Order?

Answer. Although NTCA—The Rural Broadband Association (“NTCA”) welcomed the delay of implementation in the next round of cuts for providers, the most recent Federal Communications Commission (“FCC”) order does not fix the many underlying issues with the Quantile Regression Analysis (“QRA”) caps. We have continued to engage with the FCC on the need to undertake a substantial review of and likely replacement for the QRA system, and we are hopeful that the FCC might even adopt a different mechanism to avoid once and for all the byzantine, retroactive caps that still apply pursuant to the QRA mechanism. *A copy of our latest proposal to the FCC in this regard can be found in the attached Ex Parte Letter from NTCA dated September 12, 2013.*

Question 2. If you don't think the Quantile Regression Analysis works in current form, what alternatives have you proposed to the QRA?

Answer. First and foremost, it is essential to fix the underlying data issues that are known to be resident within the QRA mechanism. As NTCA has shown in repeated filings since the Sixth Order on Reconsideration, many steps are needed to determine whether and to what degree the QRA can (or even should) be salvaged—and those steps cannot begin until the acknowledged errors in the underlying model are identified and corrected. *Additionally, NTCA along with USTelecom and WTA worked with former Chief Economist of the FCC, Simon Wilkie, to examine the volatility of the QRA. A copy of the study is attached hereto. Copies of other filings since earlier this year on these points can be found in the attached documents: Ex Parte Letter from NTCA and WTA dated March 6, 2013 Ex Parte Letter from NTCA dated April 18, 2013, Ex Parte Letter from NTCA dated May 31, 2013, and Ex Parte Letter from NTCA dated July 19, 2013.*

In recent months, however, NTCA has worked with other stakeholders to create an alternative proposal that would satisfy the FCC's desire for “fiscal responsibility” in the form of a reasonable, well-defined constraint on future investments without injecting byzantine levels of complexity and uncertainty into the recovery of *both* past and future investment. A summary of this proposal, entitled the “Capital Budget Mechanism,” can be found in the Ex Parte Letter from NTCA dated September 12, 2013 attached hereto. This proposal would define each small carrier's “budget” for future USF-eligible investment based upon a transparent identification of its need to replace depreciated plant over a series of years, and the mechanism includes a “trigger” that could be used by the FCC to adjust a given carrier's *future* investment budget without putting at risk recovery of costs associated with investments made years ago in accordance with then-current rules and reasonable expectations.

Question 3. If you think the current waiver process is broken, what specific steps would you take, or urge Congress to take to fix it?

Answer. The process by which a carrier can obtain relief from certain of the reforms in FCC order 11–161 remains problematic. Initially, under the 2011 order, a

consumer could see an unreasonable increase in broadband rates, degradation in broadband speeds or service quality, or even lose access to broadband service altogether as a result of a FCC rule change, and yet no waiver would have been granted. In its Fifth Order of Reconsideration, however, the FCC confirmed that these too could be factors justifying the grant of a waiver, and the agency also took certain other steps to relieve some (but not all) of the burdens associated with obtaining a waiver.

The FCC has touted the waiver process as an important safety valve where the reforms are having the effect of undermining, rather than promoting, universal service. Unfortunately, even in the wake of the Fifth Order on Reconsideration, waivers continue to take incredibly long periods of time to address, cost carriers large amounts of money to seek, and, to date, we have seen little, if any, improvement in the process. If the waiver process is to be cited as the last line of defense for universal service, it needs marked improvement—and it should be clear in the first instance that any universal service program that relies as much as this current system on a protracted and opaque waiver process raises serious concerns in light of the statutory requirement that USF support must be specific, predictable, and sufficient.

Ultimately, if a well-functioning Connect America Fund can be set up that provides predictable and sufficient support for investments in broadband-capable networks by smaller carriers, if the QRA mechanism can be addressed as suggested by NTCA and others in recent proposals, and if the FCC can eliminate the regulatory uncertainty created by the “overhang” prospect of even more cuts in the further notice of proposed rulemaking issued in 2011, this could help to reduce the need for and reliance upon a waiver mechanism in the first instance.

Question 4. Please explain in more detail your proposal for a Connect American Fund for RLECs—why it is needed and how it would work?

Answer. Details of the proposal (including specific recommended rules to implement the proposal) can be found in the following filings made in recent months by NTCA and allied stakeholders with the FCC and included in the addendum: *Comments of NTCA et al.*, dated June 17, 2013, Reply Comments of NTCA *et al.*, dated July 15, 2013, and Ex Parte Letter from NTCA dated September 12, 2013.

NTCA’s proposal is intended to solve a technical gap in “connecting the dots” between FCC order 11–161 and the rules that govern distribution of USF support to smaller carriers. In the order, the FCC clearly grasped the need to evolve how it would support broadband-capable networks. Specifically, the FCC ruled in the order that the service to be supported through high-cost USF going forward would no longer be the actual *sale* of “Plain Old Telephone Service” (or “POTS”), but rather the *offer* of “voice telephony service” on broadband-capable networks. Specifically, the FCC determined that to be eligible for receipt of USF support, carriers should be required “to offer voice telephony as a standalone service throughout their designated service areas.” The Commission further stated that “Section 254 grants . . . the authority to support not only voice telephony service but also the facilities over which it is offered,” and that “the modified definition simply shifts to a technology neutral approach, allowing companies to provision voice service over any platform, including the PSTN and IP networks.

Unfortunately, the unmistakably clear, forward-looking vision in the text of the FCC’s order did not carry through as a simple mechanical matter to the rules that actually govern the distribution of USF support for smaller carriers such as those in NTCA’s membership. Instead, while these smaller carriers can and already do leverage USF support to justify the deployment and enable the operation of broadband-capable networks in high-cost areas, these smaller carriers cannot receive USF support for the portion of the network used to serve a given customer unless that customer *actually chooses to buy POTS service*. Thus, where a customer chooses to buy wireless voice service or wants to take an over-the-top VoIP service (such as Vonage) but then desires to keep fixed broadband service from the smaller carrier, that customer’s broadband rates ironically spike several times over because, pursuant to rules that were left unchanged in the 2011 reforms, USF support is no longer available in connection with that portion of the small carrier’s network.

This result flies in the face of the vision of the order, as well as the intent to promote and sustain an IP evolution and “modernize” the USF program for a broadband-capable, IP-enabled world. To remedy this disconnect between the FCC’s vision as stated in the order and the rules that govern distribution, NTCA and other stakeholders have proposed support for “data-only broadband” or “standalone broadband” in the form of a Connect America Fund for smaller carriers. Under this proposal, while a smaller carrier would be required to offer voice telephony service to each and every consumer, as with the CAF for price cap carriers, the availability of USF support to deliver affordable services would not be dependent upon whether

any given customer chooses to buy POTS service when offered. The exact amount of USF/CAF support available to each carrier under this proposal would be calculated based upon an assessment of the costs required to provide service on the supported network as compared to the “reasonably comparable” rate that the carrier should be expected to obtain from the consumer in connection with the provision of such service.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. MARK WARNER TO
JERRY JAMES

Question 1. With respect to the coming IP transition and advancing technology, which specific requirements from the Telecommunications Act of 1996 are the most important to maintain to ensure fair competition in the marketplace?

Question 1a. For example, the 1996 Act has clear interconnection requirements. Do you believe that these provisions are technology-neutral and should apply in an IP-based network? If not, please explain why not.

Answer. The provisions of the Communications Act establish the preconditions for competition in the telecommunications market by requiring that competitors have access to last-mile end-user connections and interconnection on reasonable rates, terms, and conditions. These provisions are crucial to the IP transition because the most effective way of promoting efficient investment in new IP technologies is to promote competition. Moreover, these provisions are technologically neutral. They have applied to every technology used in the network since its inception, and it is crucial that the FCC apply them to IP networks.

First, it is impossible to overstate the importance of ensuring access to last-mile, end-user connections on reasonable rates, terms and conditions. The incumbent telephone companies own the only physical connection to many business customers in the U.S. It is not economically possible for competitors to replicate these facilities because the steep costs associated with building new facilities (*e.g.*, obtaining access to rights of way, digging up streets, etc.) often far exceed the revenues that can be earned from serving business customer locations. This is so regardless of whether the services provided to the customers utilize legacy technologies or new IP technologies. As a result, incumbent telephone companies have market power over last mile connections to business customers, and they have little or no incentive to make these facilities available to their competitors.

This is why the terms of the Communications Act, both those adopted in the original 1934 Act (sections 201(b) and 202(a), which govern special access) and the amendments added in 1996 (sections 251(c)(3) and 252(d)(1), which govern unbundled network elements), mandate that incumbent LECs provide these facilities to competitors on reasonable rates, terms, and conditions. Competitors rely on last mile facilities made available pursuant to these statutory provisions to provide innovative, game-changing services to business customers. This would not be possible if last-mile facilities were unavailable to competitors at wholesale, and, again, this is true regardless of the technology used to provide services over the end user connections. Thus, if incumbent telephone companies are no longer required to provide competitors access to last mile facilities after the transition to IP networks, U.S. businesses would lose the benefit of competition, yielding less innovation, higher prices, and degraded service quality.

Second, interconnection is also critically important. A provider of voice services must be able to interconnect its network with other providers' networks in order to ensure that its customers can call the other providers' customers. But so-called “network effects” prevent incumbent telephone companies from having an incentive to cooperate with competitors in establishing interconnection arrangements. As the FCC has explained, “[n]etwork effects arise when the value of a product increases with the number of customers who purchase it.”¹ For instance, the value of a subscriber's telephone service increases as the number of other people the subscriber can reach using that service increases.² And, “[i]f the attractiveness of a [telephone or other communications] network increases as it enlarges, consumers will tend to choose the larger network, which in turn will make it even larger and more attractive.”³ For this reason, large incumbent telephone companies—which have far large-

¹ USF/ICC Transformation FNPRM ¶1336.

² See *id.*

³ See *Network Effects in Telecommunications Mergers MCI WorldCom Merger: Protecting the Future of the Internet*, Address by Constance K. Robinson, Director of Operations and Merger Enforcement, DOJ Antitrust Division, before the Practising Law Institute, at 2 (Aug. 23, 1999).

Continued

er voice subscriber bases than virtually any of their competitors—do not need to interconnect with competitors nearly as much as competitors need to interconnect with them. As the FCC explained it in 1997, “incumbent LECs have no economic incentive . . . to provide potential competitors with opportunities to interconnect with . . . the incumbent LEC’s network.”⁴

This is as true today as it was in 1997. The size of a carrier’s customer base is still the most important determinant of its leverage in interconnection negotiations and its willingness to interconnect with other carriers. And incumbent LECs such as AT&T and Verizon still have far more voice subscribers than non-incumbent LECs.⁵ The resulting market power over interconnection persists, regardless of whether a competitor seeks interconnection using legacy technology or IP.

This is why the terms of the Communications Act mandate that service providers interconnect with each other. Of particular importance is Section 251(c)(2), which requires that incumbent telephone companies interconnect at any technically feasible point with a requesting competitor. This provision evens an otherwise highly imbalanced playing field and makes it possible for competitors to interconnect and exchange traffic with incumbent voice service providers.

Direct interconnection rights are crucial for managed IP voice services demanded by business customers because those services do not traverse the public Internet and cannot be exchanged over established Internet backbone networks. Rather, providers of business IP voice services must interconnect using separate, managed connections, a situation in which incumbents can exploit, and have exploited, to their advantage by refusing to interconnect on an IP basis. My understanding is that AT&T incumbent telephone company operations have not interconnected in IP with a single competitor for the exchange of voice traffic. Verizon has only agreed to establish such interconnection with one competitor, and that was with Comcast, one of the very few competitors with a large customer base. In contrast competitors have established IP interconnection with each other. For example, Sprint “currently has IP interconnection agreements with 12 major [non-incumbent LEC] carriers.”⁶ Similarly, tw telecom has entered into five VoIP interconnection agreements with non-incumbent LECs, including with one cable company. But competitors must eventually establish these arrangements with incumbent telephone companies, and that outcome can only be assured if the requirements of Section 251(c)(2) apply to interconnection in IP.

As the FCC has stated:

The technology change does not alter the fact that carriers must still interconnect. “Basic interconnection regulations, which ensure that a consumer is able to make and receive calls to virtually anyone else with a telephone, regardless of service provider, network configuration or location, have been a competition to thrive, the principle of interconnection—in which customers of one service provider can communicate with customers of another—needs to be maintained.”⁷

The change in technology also does not alter the incumbent LEC’s subscriber base or its control of the physical facilities used to provide the service. Moreover, in the

available at <http://www.justice.gov/atr/public/speeches/3889.pdf> (“DOJ Network Effects in Telecommunications Mergers Address”).

⁴Implementation of the Local Competition Provisions in the Telecommunications Act of 1996; *Interconnection Between Local Exchange Carriers and CMRS Providers*, First Report and Order, 11 FCC Rcd. 15499, ¶55 (1996) (“Local Competition Order”) (subsequent history omitted).

⁵This point can be illustrated by measuring the value of a large incumbent LEC’s network relative to that of a competitor. Under one such measure (known as “Metcalfe’s law”), the relative value of a network is proportional to the square of the number of subscribers served by the network. See Michael Kende, FCC Office of Plans and Policy, *The Digital Handshake: Connecting Internet Backbones*, OPP Working Paper No. 32, at 3 n.5 (Sept. 2000), available at http://www.fcc.gov/Bureaus/OPP/working_papers/oppwp32.pdf. The difference in the relative values of incumbent LECs’ voice networks and competitive LECs’ voice networks is enormous. For example, Cbeyond, a CompTel member, provides voice and data services to approximately 59,000 business customers. See Cbeyond, Inc., SEC Form 10-Q, Item 2 (filed May 2, 2013); Integra Telecom, About Us, <http://www.integratelecom.com/about/Pages/default.aspx> (last visited Aug. 1, 2013). AT&T provides approximately 122.9 million total voice connections. See AT&T Inc., SEC Form 8-K, Items 8.01, 9.01 (filed July 24, 2013). This total includes 92.7 million wireless connections (excluding data-centric devices such as tablets), 26.8 million switched access lines, and 3.4 million U-Verse VoIP connections. See *id.* Even under the conservative assumptions that all of Cbeyond’s business customers purchase voice services and that those customers each purchase numerous voice connections (e.g., 100 voice connections), Metcalfe’s law would yield the conclusion that AT&T’s voice network is hundreds of times more valuable than Cbeyond’s and Integra’s voice networks.

⁶See Comments of Sprint, GN Docket No. 13–5, at 6 (filed July 8, 2013).

⁷The National Broadband Plan at 49.

case of managed VoIP services, which constitute the *vast majority* of interconnected VoIP subscriptions,⁸ the end-user service is fundamentally the same as one's traditional phone service. Unlike over-the-top service, managed VoIP services do not traverse the public Internet and provides substantially higher quality of service, security and reliability. A consumer is unlikely to view a managed VoIP service any differently from their traditional phone service. Managed VoIP service meets the statutory definition of a telecommunications service.⁹

Finally, there can be no dispute that the terms of the Communications Act that mandate access to last-mile end-user connections and interconnection are technology neutral. This is evident from the terms of the provisions, which make no distinction between legacy and new technologies. Moreover, as, the Federal Communications Commission ("FCC") explained when addressing the 1996 amendments, "[n]othing in the statute or legislative history indicates that it was intended to apply only to existing technology. . . Congress was well aware of. . . packet-switched services in 1996, and the statutory terms do not include any exemption for those services."¹⁰

Question 1b. How important is it to maintain the legacy/copper communications networks as we transition to IP? If so, for how long? If not, please explain why not?

Answer. As an initial matter, IP alone cannot get traffic from Point A to Point B. The reason is that IP is nothing more than a software protocol—a set of rules; it is not a physical network. IP, therefore, needs a physical network framework over which to transport traffic according to its rules. Just as with TDM, IP can be used with the legacy copper, fiber or wireless networks.

As explained, the ability for competitors to have access to last mile facilities to the consumer is critical for consumers to have a choice in service providers. As also explained, competitors cannot possibly replicate the ILEC network in many locations. So where building facilities is not a viable option, competitors have no choice but to rely on access to ILEC last-mile facilities.

The most efficient last-mile connections for providing IP service utilize packet-based technology, such as Ethernet. Incumbent LECs have market power over last-mile end-user connections that utilize this technology just as they have market power over last-mile end-user connections that utilize legacy technologies. In order to ensure that business customers receive the benefits of competition during and after the transition to IP, it is critical that the FCC adopt rules requiring that incumbent telephone companies offer packet-based last-mile end-user connections, including those that utilize Ethernet, to competitors on reasonable rates, terms, and conditions. These rules should apply regardless of whether the underlying physical connection to the end user consists of copper, fiber or some other material. Failure to ensure this outcome will ultimately hobble competition and harm the U.S. economy.

But until the FCC adopts such rules, it must make sure that legacy copper loops are available to competitors. Existing FCC last-mile access rules severely curb the access competitors have to incumbent LEC last mile facilities. Among the few kinds of last-mile facilities that are subject to regulation are legacy copper loops. Competitors use the last mile access they obtain through the copper loop to serve business customers. They have done so by providing innovative and valued services to small and medium size businesses and to supplement service to multi-location enterprise customers in locations where it has been uneconomical for them to build their own facilities. Competitors have invested millions of dollars to be able to offer these advanced services which are at risk when such last mile facilities are unavailable. In other words, the availability of the copper loop provides business consumers a choice in providers they otherwise would lack and encourages substantial infrastructure investment by competitors in the electronics that translate a bare copper wire to a broadband facility. Thus, until the FCC updates its rules governing access to last-

⁸ Only 10 percent of interconnected VoIP subscribers use an Internet based service. The FCC reported 37 million interconnected VoIP subscriptions at the end of 2011, see Local Telephone Competition, Status as of December 31, 2011, Industry Analysis and Technology Division, Wireline Competition Bureau, January 2013, p. 1 ("FCC 2013 Local Competition Report"), and USTELECOM estimates there to be a mere 3.5 million of OTT VoIP lines, see USTELECOM, "Evidence of Voice Competition and ILEC Non-Dominance Mounts," April 2, 2013, at 8 ("UST Brief"). Available at: <http://www.ustelecom.org/news/research-briefs/ustelecom-research-brief-april-4-2013>. COMPTTEL does not endorse the USTELECOM analysis (which generally understates ILEC dominance).

⁹ 47 U.S.C. 153(46) ["The term "telecommunications service" means the offering of telecommunications for a fee directly to the public, or to such classes of user as to be effectively available directly to the public, regardless of the facilities used." (Emphasis added).]

¹⁰ Memorandum Opinion and Order, and Notice of Proposed Rulemaking, *Deployment of Wireline Services Offering Advanced Telecommunications Capability*, CC Docket Nos. 98-147, 98-11, 98-26, 98-32, 98-78, 98-91, CCB/CPD No. 98-RM 9244, FCC 99-188, ¶48-49 (1998).

mile end user connections to encompass facilities to utilize packet technology such as Ethernet, it must ensure that competitors continue to have access to copper loops.

Question 2. Reform of the Universal Service Fund (USF)/creation of the Connect America Fund (CAF) is critically important because millions of Americans still lack access to high-speed broadband service in many areas of the country. According to the National Broadband Plan, broadband is available in 98 percent of the nation, but the national adoption rate, according to the National Telecommunications and Information Administration (NTIA) and Census data, is 72 percent. I believe it is important for all Americans to have access to high-capacity broadband service, and therefore, I am focused on policies that help us to reach 100 percent coverage of U.S. households. However, we have a limited amount of money that we can allocate as a nation to rural broadband deployment, and I believe we should prioritize funding to support buildout in unserved areas or areas below 4 mbps down/1 mbps. Typically, these areas are still unserved because of the high cost of deployment and the low population density. Understandably, this makes it difficult for private companies to deploy broadband in these areas, and it is also the reason why policymakers decided to create programs like USF/CAF—to serve hard-to-reach places in the country.

Question 2a. Do you believe CAF is adequately focused on broadband deployment in unserved areas? If so, how long do you think it will take to reach full deployment? If not, please explain what it would take to buildout unserved areas of our country given that we only have approximately \$4.5 billion/year through USF.

Question 2b. Is the pace of reform moving too slowly?

Answer. COMPTTEL agrees that ensuring all consumers in the U.S. have access to broadband services is an important goal for our Nation and that increasing the broadband adoption rate in the U.S. is necessary to ensure that the entire nation benefits from the broadband economy. As you know, the FCC's effort to reform the high-cost program in USF was largely focused on reallocating money to areas not served by broadband, which are largely in the price cap carrier territories.

Generally, COMPTTEL members are not eligible to receive funding in the reform of the high-cost program; however, we do have one member that is an incumbent price cap telephone company that qualifies, and it has accepted funding in both rounds of CAF Phase I and is deploying broadband services to unserved areas. During CAF Phase II, should the incumbents not accept a statewide commitment to serve at the funding amount to be determined by the FCC using a cost model (that is under development), then other qualified providers may have the opportunity to apply for the support and meet the service obligations (the process by which is still to be determined by the FCC). COMPTTEL believes that every provider that is willing to serve those areas should be eligible to apply for and receive funding if they can meet the service obligations.

With respect to your last question about the pace of reform, yes implementation of the reforms is taking a significant amount of time. Unfortunately, any time a Federal funding program undergoes a major overhaul such as this, delays are to be expected.

Question 3. Based on my experience in Virginia, it is not possible to deploy fiber absolutely everywhere. Many areas of my state have granite rockbeds, which make it prohibitively expensive to deploy fiber. Therefore, I am supportive of cost effective deployment of broadband technology to reach universal coverage. Although I recognize that the focus of this hearing was on wireline issues, it seems to me that we should consider the best technologies based on our national goal of providing advanced communications services to all Americans.

Question 3a. Should the Federal Communications Commission (FCC) focus more resources on best-available technology for unserved areas or areas below 4/1? If so, please explain what else the FCC could do to improve broadband coverage to unserved areas. If not, please explain how we can reach full broadband deployment by focusing more on fixed services, at a reasonable cost to taxpayers and consumers.

Question 3b. Please describe what role you see for other technologies in terms of serving hard-to-reach areas in the near term. Could we be more technology-neutral in our Federal broadband funding programs?

Answer. The FCC's reform establishes two different types of funding—one for fixed service (with its CAF) and one for mobile service (with its Mobility Fund), acknowledging the importance of both fixed and mobile service to consumers in the U.S. COMPTTEL has consistently advocated for policies that are competitively and technologically neutral. The FCC maintains that its approach to USF reform is technologically neutral. Many of COMPTTEL's members use an "all of the above" strat-

egy, offering a combination of fiber, copper, mobile and fixed wireless, to achieve the broadest possible reach to consumers and businesses in unserved and underserved areas. There is no “one size fits all” approach to serving those communities that are the hardest to reach and the FCC should continue to look at all reasonable avenues to address Federal broadband funding programs and other incentives to expand and improve broadband coverage.

Question 4. Would more targeted broadband mapping—at the address level, specifically—help to accelerate deployment to unserved areas? If not, please explain why less granular data models are sufficient to target deployment to unserved households. Do you believe the current level of data gathered by the National Broadband Map contributes to overbuilding? If not, please explain.

Answer. Revisions to the FCC’s broadband data collection form (the Form 477) are expected to go into effect next year and as a result, the FCC will be collecting the deployment information that is used for the National Broadband Map as well as broadband subscriber information. It is our understanding that the FCC is using the Map to evaluate the CAF-funded builds and a challenge process has been adopted to avoid funding overbuilds in the second round of CAF Phase I. We believe that the FCC’s collection of data (as reformed) is sufficient at this time, especially given the challenge process established so that competitors may dispute a specific build plan using CAF Phase I funds.

Question 5. As many experts have noted, there is “rural-rural divide” when it comes to the presence of broadband infrastructure in rural America. According to the FCC, more than 83 percent of the approximately 18 million Americans that lack access to residential fixed broadband at or above the basic level of acceptable service outlined in the National Broadband Plan live in areas served by price-cap carriers. The FCC attempted to address this disparity by establishing an incremental support component in the Phase I CAF Fund for price cap carriers. The initial support was established at \$300 million, but more than half of the allocated funds went unclaimed. Different types of carriers have expressed opinions about whether or not it was a good idea for the FCC to set aside this amount of money even though the bulk of the \$4.5 USF program was allocated to other types of carriers.

Question 5a. Regardless of your views on the Phase I Fund, do you think the FCC has done enough to provide coverage to the 14.9 million people who still lack any sort of basic broadband service?

Question 5b. If so, when do you think we can expect to provide broadband service to all Americans? If not, what else could the FCC do to provide universal broadband service?

Answer. The challenge of serving all Americans with broadband is great given the diverse geographic areas of the Nation. Moreover, reforming USF so that it could more effectively target funds to unserved areas was a significant accomplishment for the FCC. The FCC balanced the burden on consumers who contribute to USF with its goal of reaching unserved Americans when it established the \$4.5 billion budget for the high-cost programs. At the same time, the FCC unfortunately has yet to address contribution reform or to broaden the contribution base to include users of broadband services.

The National Broadband Plan that the FCC staff formulated under Chairman Genachowski’s leadership recommended that Congress provide additional funding to build broadband infrastructure in unserved areas. Given the national importance of broadband infrastructure, this recommendation could be taken up by Congress to the extent that it is dissatisfied with the pace of broadband deployment in the unserved portions of rural America. Should you do so, COMPTTEL would encourage an application process for those funds that permits all technologies and service providers that can meet the service requirements an opportunity to compete for the support.

Question 6. There has been a great deal of discussion about the FCC’s models for CAF. Given that technology is advancing at a rapid rate, it seems like the FCC should be focused on establishing a cost model that is updated frequently enough to provide an accurate sense of the marketplace.

Question 6a. How important is the timeliness of the FCC’s proposed cost model in delivering service to unserved areas?

Question 6b. Do you agree with the revisions the FCC has made to its cost model? Does the cost model accurately predict needs/services under CAF? If not, or if you believe the FCC model should lock in rates for a longer period of time, please explain how a longer view would deliver broadband to unserved areas more quickly than an annualized model.

Answer. COMPTEL has not been participating in this process at the Commission. Under the current structure of the FCC's USF Reforms, the principal role of the cost model will be to allocate "relative" support among areas served by incumbent local exchange carriers. Because the vast majority of COMPTEL members are not incumbent local exchange carriers—and, therefore, are not eligible for support determined by the cost model—we have not been engaged in a process that largely impacts only incumbents.

Question 7. A report by the nonpartisan Congressional Research Service analysis captures one of the major challenges of USF reform as follows:

"Smaller, rural, rate-of-return carriers are particularly dependent on USF subsidies, and have expressed concern that the reforms that the USF Order will implement could place them under financial hardship. Many RUS telecommunications and broadband borrowers (loan recipients) receive high cost USF subsidies. In many cases, the subsidy received from USF helps provide the revenue necessary to keep the loan viable. The Telecommunications Infrastructure Loan program is highly dependent on high-cost USF revenues, with 99 percent (476 out of 480 borrowers) receiving interstate high-cost USF support. This is not surprising, given that the RUS Telecommunications Loans are available only to the most rural and high-cost areas (towns with populations less than 5,000). Regarding broadband loans, 60 percent of BIP (stimulus) borrowers draw from state or interstate USF support mechanisms, while 10 percent of farm bill (Rural Broadband Access Loan and Loan Guarantee Program) broadband borrowers receive interstate high-cost USF support. Thus, to the extent that USF may be reformed, this could have an impact on the viability of RUS telecommunications and broadband loans, and ultimately the overall financial health of the carrier.

Although the FCC included a waiver process in its USF Order for those carriers that felt they would be subject to significant economic stress, due to the reforms, many smaller carriers assert that the waiver process is too burdensome and difficult and that the requirements for qualifying for relief are too restrictive."

Additionally, according to the U.S. Department of Agriculture, demand for RUS loan funds was only 37 percent of loan funds appropriated by Congress in FY2012. This is indicative of the fact that the restructuring and uncertainty around USF/CAF reform could diminish the desirability of RUS broadband loans to borrowers going forward.

Question 7a. Given that the RUS and USF broadband programs share the goal of deploying broadband to rural America, and many RUS borrowers appear to be significant beneficiaries of USF as well, are these programs effectively targeted towards providing broadband to unserved areas of the nation?

Question 7b. Are these programs the most cost-effective way for Congress to fund rural broadband development? If so, please explain why. If not, please share any ideas you may have regarding a more cost-effective approach to encouraging broadband deployment.

Question 7c. Given that these two programs (USF and RUS) share the same goals, to what extent are they duplicative and to what extent are they complementary?

Question 7d. Do you think that the FCC waiver process, as designed and described above, is appropriate? If so, why? If not, what changes would you recommend?

Answer. The Commission also reformed aspects of the support rate-of-return carriers receive for serving their areas, and it continues to look at ways to achieve additional reforms. We have not taken a position on this aspect of USF reform, but we do believe that it is important for the Commission to ensure that the high-cost funding is competitively-neutral, is as efficient and effective as possible, and only is used in areas where, but for Federal assistance, consumers would not have access to services in rural areas that are comparable to services available in urban areas.

RESPONSES TO WRITTEN QUESTIONS SUBMITTED BY HON. MARK WARNER TO
LARRY DOWNES

Question 1. With respect to the coming IP transition and advancing technology, which specific requirements from the Telecommunications Act of 1996 are the most important to maintain to ensure fair competition in the marketplace?

Question 1a. For example, the 1996 Act has clear interconnection requirements. Do you believe that these provisions are technology-neutral and should apply in an IP-based network? If not, please explain why not.

Answer. I do not believe that interconnection requirements or any other requirements of Title II of the Communications Act are “technology neutral,” and I would advise Congress not to attempt to transport or translate any specific requirements of Title II of the Communications Act to IP networks.

Title II was inherited into the 1996 Act to deal with lingering competitive issues of the former wireline monopoly. One could argue that its continued application has contributed significantly to the obsolescence of the PSTN network, but in any case it has no place—either as a matter of sound engineering or sound policy—in an all-IP world.

IP networks have developed as well as they have precisely because they have not been subject to the kind of legacy regulation that has applied to the former PSTN telephone monopoly. That has provided significant incentives for providers to make massive capital investments, and for engineers to innovate constantly in the development of better and cheaper hardware, software, and standards that have always been at the core of the Internet.

From a design and engineering standpoint, the concept of mandated interconnection as the FCC has implemented it under Sections 251 and 252 of the Communications Act is a non sequitur in the context of IP networks. The Internet has always operated on the basis of peering arrangements, over 99.5 percent of which, according to the OECD, are so simple that they aren’t even memorialized in written documents.

It is hard to imagine how, as a matter of sound engineering, it would even be possible to sub-divide IP traffic in a way that would make it possible to apply Section 251 and Section 252 on voice-related IP traffic moving solely between networks of ILECs and CLECs. Indeed, some parties in the FCC’s on-going IP Transition trials proceeding are trying to use that engineering impossibility as an opportunity to apply “interconnection” mandates to all IP traffic, effectively bringing all Internet traffic under Title II—in clear violation of the Communications Act and Congress’s sensible decision to leave information services including data, text, and video outside of the obsolete legacy rules.

As I explained in my written testimony:

Some critics of proposed IP transition trials have argued for the continued application of existing regulations (particularly interconnection mandates under Sections 251 and 252 of the Communications Act), arguing that these provisions should apply in a “technology neutral” fashion.¹

According to these critics, “the policy justifications for requiring ILECs to provide interconnection and to submit to arbitration—namely, the ubiquity of ILECs’ telecommunications networks and market power that these pervasive networks confer—arise regardless of the technology used by those networks to transmit and exchange telecommunications traffic.”²

Not only are these complaints irrelevant to the proposed trials (which are small steps aimed at determining precisely *whether* constraints such as Sections 251 and 252 are appropriate), but their alleged policy justification is not, in fact, “technology neutral.” Instead, it is a call to apply barnacled rules, crafted over decades specifically for the technology and business realities of the PSTN, to a new ecosystem that shares few, if any, of the same characteristics.

Technology neutrality does not mean blindly enforcing design principles suited for tree houses as buildings codes for steel skyscrapers. Modern structures are clearly better. They require entirely different rules, and different kinds of enforcement. Applying PSTN rules to IP networks is bad business and bad public policy. There are no regulated monopolies in the IP ecosystem, and no need for the kind of regulations aimed at controlling them.

¹See, e.g., Comments of Competitive Carriers Association, *In re AT&T Petition*, GN Docket No. 12–353 (Filed Jan. 28, 2013), available at <http://apps.fcc.gov/ecfs/document/view?id=7022113646>.

²Id. at 3.

An all-IP-infrastructure is clearly better for everyone. The sooner we can complete the transition, the sooner we will reap the full dividends of continuing private and public investments in this new infrastructure. Getting the transition right will not only save the legacy PSTN operators from irrelevance. It will likely bolster the U.S. economy, accelerate the technological empowerment of Americans as both citizens and consumers, and sustain global competitiveness for U.S. technology companies.

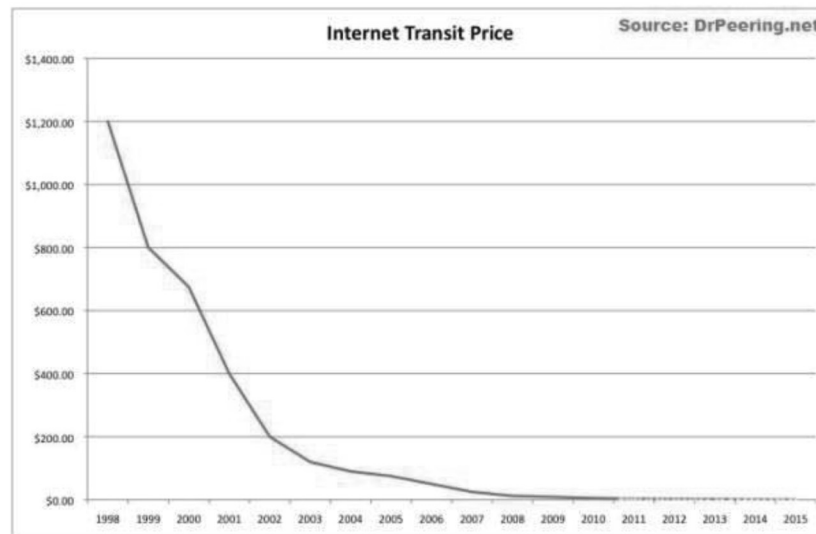
As the National Broadband Plan put it,

[B]roadband is a foundation for economic growth, job creation, global competitiveness and a better way of life. It is enabling entire new industries and unlocking vast new possibilities for existing ones. It is changing how we educate children, deliver health care, manage energy, ensure public safety, engage government, and access, organize, and disseminate knowledge.³

In *The Politics of Abundance*, former FCC Chairman Reed Hundt and his one-time chief of staff Blair Levin make a persuasive case that the shift to “connected computing”—broadband Internet, cloud-based services, and widespread mobile devices—is essential to jumpstart the U.S. economy. Hundt and Levin urge all levels of government to take immediate steps to support what they call the “knowledge platform”—ultra high-speed broadband with high reliability and low latency, able to support high-bandwidth, video-intensive applications and cloud-based services.

As Hundt and Levin write, “[t]o increase growth, job creation, productivity gains, and exports at a faster rate, government should double down on what is already doubling in the Internet sector.”⁴ They point, for example, to the fact that Internet transit prices have improved as much as 50 percent each year. (See Figure 1)

Figure 1—Internet Transit Price per 1 Mbps, 1998–2015



Source: Hundt & Levin, *supra* note 22, Figure 2.1, p. 105

The kind of high-speed, widely accessible and affordable broadband Hundt and Levin describe also provides the tools that innovators need to launch more Big Bang Disruptions. All-IP networks will vastly expand the possibilities of the next generation of cloud services like Google, Facebook, Twitter and Salesforce.

³National Broadband Plan, *supra* note 14, at xi. See also chapters 10–16. And see Robert E. Litan and Hal Singer, *THE NEED FOR SPEED: A NEW FRAMEWORK FOR TELECOMMUNICATIONS POLICY IN THE 21ST CENTURY* (Brookings Institution Press 2013).

⁴Reed Hundt & Blair Levin, *THE POLITICS OF ABUNDANCE: HOW TECHNOLOGY CAN FIX THE BUDGET, REVIVE THE AMERICAN DREAM, AND ESTABLISH OBAMA'S LEGACY* 9 (2012), 16–17.

These services and others that will follow will be superior in ways both easily imaginable (instant, more reliable interaction with richer media like video, streaming presentations, and more robust tools) but also in ways that we cannot yet imagine.

Preserving Peer-Based Interconnection

The IP Transition will accelerate the ongoing transformation of our digital experiences in ways that could be as revolutionary as the introduction of the Internet itself. It is imperative that government, private sector companies, and consumers work together to get it done as quickly as possible.

Government, in particular, should work to undo much of the regulatory mess that unnecessarily constrains legacy PSTN providers as they transition to IP. For example, Congress and the FCC should reject self-serving calls to impose outdated regulations mandating network interconnection, devised for an era of monopoly voice carriage, on the well-functioning market for private Internet peering agreements, which already ably provides for the efficient transport of voice as well as video and data traffic.

Private peering arrangements have long provided an efficient mechanism for interconnection on packet-switched networks, regardless of whether the packets contain data, video, and voice applications. The shutdown of PSTN networks and the migration of additional voice traffic to the Internet do not change the dynamics of that system. As Michael Kende, former Director of Internet Policy Analysis at the FCC has recently written:

[T]he competitive concerns that historically drove interconnection regulations for PSTN-based voice service are no longer valid due to the rapid take-up of many different types of alternative communications services to traditional voice, such as cable telephony, software-based voice over IP (VoIP), and other IP-based forms of communications. Therefore, as voice migrates to the Internet there is no need for any regulation of IP voice traffic which mirrors the regulation of the PSTN on competition grounds, because the current IP interconnection arrangements show how traffic will flow end-to-end without a regulatory mandate.⁵

Today, marketplace and reputational incentives drive interconnection and consumer protections. These incentives are buttressed by various multistakeholder processes that continue to evolve to supplement direct company-to-company dispute resolution.⁶ At the same time, the FCC retains authority under Title I of the Communications Act to regulate for public safety, and antitrust and consumer protection laws govern IP services precisely because they are not regulated as common carriers (which are excluded from the FTC's general jurisdiction over the economy).⁷

If significant issues do arise in the IP transition that escape these multiple layers of regulatory and governance constraints, Congress can of course enact legislation appropriately targeted to address clear consumer harms. But narrowly tailored legislation from Congress after the IP transition has evolved of its own accord is the proper mechanism for addressing such issues—not by bringing the dead weight of old regulatory baggage to new markets.

Not surprisingly, several parties in the FCC's on-going IP transition proceedings have urged the agency to transplant legacy interconnection requirements on IP networks as part of the retirement of the PSTN. PSTN interconnection requirements, however, were formulated when the Bell System was a true, regulated monopoly. They were a necessary evil to control monopolistic risks, and they have imposed considerable waste, fraud and unnecessary cost in exchange for

⁵Michael Kende, *Voice Traffic Exchange in an IP World*, Analyses Mason, April 12, 2013, at 2.

⁶Most notable among these is the Broadband Internet Technical Advisory Group (BITAG), "a technical advisory group to discuss and opine on technical issues pertaining to the operation of the Internet, as a means of bringing transparency and clarity to network management processes as well as the interaction among networks, applications, devices and content." BITAG History, http://www.bitag.org/bitag_organization.php?action=history (last visited February 25, 2013).

⁷See Federal Trade Commission, *Broadband Connectivity Competition Policy*, 3 (2007), available at <http://www.ftc.gov/reports/broadband/v070000report.pdf> ("[FTC] jurisdiction [over broadband Internet access services] had once been regarded as limited to the extent that the FTC's general enforcement authority under the FTC Act did not extend to entities that were 'common carriers' under the Communications Act. The regulatory and judicial decisions at issue, however, confirmed that the larger categories of broadband Internet access services, as information services, are not exempt from FTC enforcement of the FTC Act.").

that benefit. Consider, for example, recent FCC reforms of intercarrier compensation aimed at reducing such interconnection arbitrage as traffic pumping, phantom traffic and other abuses.⁸

In the IP world, by contrast, network operators worldwide negotiate all manner of peering agreements absent any regulation. Indeed, peering within the IP network is so easily achieved, as the OECD has pointed out, that “the terms and conditions of the Internet interconnection model are so generally agreed upon that 99.5 percent of interconnection agreements are concluded without a written contract.”⁹ Simply put, there is no evidence that anything is broken in the IP network ecosystem.

Those asking regulators to invent an IP interconnection regulatory scheme for voice (or perhaps for all Internet traffic) invoke public interest concerns, but the real motivation is simple rent-seeking. Smaller carriers prefer below-market rates for backhaul, and CLECs are eager to protect their subsidized business model in new ecosystems that are already highly competitive. But these desires have nothing to do with consumer harms, let alone the public interest. In any case, the FCC should avoid “prophylactic” regulations for interconnection problems that, as even those asking for them admit, are speculative.

That Internet peering works so well absent regulation is no surprise. Major ISPs have strong business incentives to interconnect. For example, ISP customers increasingly demand access to streaming video content from services such as Netflix and Amazon, and ISPs know that streaming video is the primary reason that customers are willing to pay for high-speed broadband connections at home.

Where disputes have arisen (often around the distinction between settlement-free transit vendors and paid-peering content delivery networks (CDN), for example¹⁰), they have taken the form of contract disputes between large commercial players over *the specific terms* of interconnection, not *whether* it will be available.

Moreover, demand for streaming video has become so strong that Netflix, having established its own CDN, can now sidestep such disputes and pressure ISPs to accede to its peering demands by threatening to withhold new content or services. It is now *content providers*, in other words, and not ISPs, who threaten to withhold traffic.¹¹ The newfound market power of content providers—as well as increasing intermodal competition from mobile broadband—upends the weathered assumption that ISPs hold all of the bargaining power in interconnection negotiations.

Question 1b. How important is it to maintain the legacy/copper communications network as we transition to IP? If so, for how long? If not, please explain why not.

Answer. It is, of course, essential to continue providing service to customers of the obsolete PSTN network until such time as a final cutover date is set and approved. (As for the actual infrastructure technology, copper is perfectly capable of carrying IP traffic at broadband speeds for short distances and of course does so today. The retirement of the PSTN network and the replacement of copper are not the same thing, and I presume the question refers to the former and not the latter.)

It is, however, essential that Congress and the FCC move quickly to organize and establish a date certain for moving the remaining PSTN customers to better and cheaper IP networks. The transition is already happening, driven by consumers who see no benefit to continue maintaining connections to the limited and technically-

⁸Report and Order and Further Notice of Proposed Rulemaking, *In re* Developing a Unified Intercarrier Compensation Regime, CC Docket No. 01–92 (November 18, 2011), available at <http://www.fcc.gov/document/fcc-releases-connect-america-fund-order-reforms-usfcc-broadband>.

⁹OECD, Committee for Information, Computer and Information Policy, Internet Traffic Exchange: Market Developments and Policy Changes, 3 (June, 2011), available at [http://search.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DSTI/ICCP/CISP\(2011\)2/FINAL&docLanguage=En](http://search.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DSTI/ICCP/CISP(2011)2/FINAL&docLanguage=En).

¹⁰See, e.g., Marguerite Reardon, *Understanding the Level 3-Comcast spat (FAQ)*, C-Net (November 30, 2010), available at http://news.cnet.com/8301-30686_3-20024197-266.html.

¹¹See, e.g., Betsy Isaacson, *Netflix Says 3D and 'Super-HD' Movies Are Just Around The Corner—But Only For Some Customers*, Huffington Post (January 9, 2013), available at http://www.huffingtonpost.com/2013/01/09/netflix-3d-movies_n_2441394.html; Fred Campbell, *Netflix Blocking Internet Access to HD Movies*, The Technology Liberation Front (January 17, 2013), available at <http://techliberation.com/2013/01/17/netflix-blocking-internet-access-to-hd-movies/>; Fred Campbell, *What Does Netflix's Decision to Block Internet Content Tell Us About Internet Policy?*, The Technology Liberation Front (January 23, 2013), available at <http://techliberation.com/2013/01/23/what-does-netflixs-decision-to-block-internet-content-tell-us-about-internet-policy/>.

inferior PSTN network. Already, over half of U.S. homes have voluntarily cut the cord to the PSTN network, integrating their voice communications with other IP-based services offered by cable, fiber, satellite, and mobile providers. By 2015 that number may reach as high as 75 percent.

As more customers abandon the PSTN network, the cost per remaining user of maintaining old and obsolete equipment and other infrastructure has already become uneconomic. It is also wasting money that would be far more effectively spent as capital investment in IP networks. The continued maintenance of the PSTN network is throwing good money after bad.

That is why it is essential, following the proposed trials, to set a date certain for complete shutdown of the PSTN network and use the remaining time to resolve any lingering technical issues and to ease the transition of remaining PSTN customers to alternative IP networks. As I explained in my written testimony:

PSTN providers can't beat better and cheaper with worse and more expensive, especially when worse and more expensive has to stay that way as a matter of law.

They must move faster. Customers are abandoning wired telephone service in favor of fiber and cable-based Voice over IP (VoIP) and mobile broadband at a remarkable rate. At its peak, the PSTN network connected nearly every American. By the end of 2011, less than half of all American homes still had a wired connection. That number could fall to as little as 25 percent by 2015.¹²

The disruptor here, of course, is networking technology that operates natively using the packet-switching protocols of the Internet. IP networks, crucially, don't care if the packets contain voice, data, or video content. While phone companies once dismissed IP as unsuitable for voice communications, carriers large and small have now embraced IP as the only option to satisfy exploding demand of consumers, cloud-based services, and the coming data deluge of machine-to-machine communications known as "the Internet of Things."

That superior design has created an enormous black hole for PSTN network operators. As fewer customers subscribe to wireline services, the cost of maintaining aging copper and analog switches is increasing dramatically, both in absolute terms and on a per-customer basis. As much as 50 percent of current wireline expenditures go toward maintenance. By comparison, the operating expenses of native IP networks can be as much as 90 percent less than for PSTN.¹³

To their credit, the incumbent providers are trying to retire and replace what had been, until recently, their most valuable assets. Both Verizon and AT&T have spent billions accelerating the replacement of copper with fiber, and circuit-switched with packet-switched equipment.

But turning off the old network isn't as simple as it sounds. By law, carriers cannot retire the switched network without Federal and perhaps state regulatory approval, even if superior alternatives are in place. And the FCC and state regulators have balked at giving permission for the switchover, calling for more study on proposed trials for PSTN to IP switchovers in test markets.¹⁴

The longer the carriers are required to spend money maintaining the obsolete networks, however, the less capital budget is available to accelerate the replacement of aging and obsolete equipment with better and cheaper IP technologies, including fiber optics, digital switches, and upgrades to straining cellular networks.

In the end, the real victims of the regulatory logjam are the remaining wireline customers who are also, not surprisingly, the ones least likely to be benefiting from Internet services. The customer segments that are farthest behind in broadband adoption, according to FCC data, are those most likely to be relying

¹²Larry Downes, *Telcos Race Toward an all-IP Future*, CNET NEWS.COM, Jan 8, 2013, available at http://ces.cnet.com/8301-34435_1-57562644/telcos-race-toward-an-all-ip-future/.

¹³*Id.* See also Larry Downes, *AT&T Moves Dramatically Towards 'Internet Everywhere'*, FORBES, Nov. 8, 2012, available at <http://www.forbes.com/sites/larrydownes/2012/11/08/att-moves-dramatically-towards-internet-everywhere/>.

¹⁴Larry Downes, *FCC Again Balks on Telephone Network Shutdown*, CNET NEWS.COM, May 14, 2013, available at http://news.cnet.com/8301-1023_3-57584306-93/fcc-again-balks-on-telephone-network-shutdown/.

on switched telephone networks as their only form of communication access.¹⁵ These include rural users, seniors, and low-income customers.

Getting these communities onto IP networks sooner rather than later eliminates the need for expensive duplication of the obsolete switched infrastructure. It will also make it easier and less expensive for them to connect to other broadband services including video and Internet access.

In that sense, allowing the carriers to accelerate the transition to IP would overcome many of the obstacles that keep 20 percent of American adults from joining the Internet. According to the Pew Internet Project, almost half of that group cite as their primary reason not to connect a lack of relevance to their needs, rather than cost.¹⁶ With IP-based telephony in place, however, the relevance for employment, education, health care, family life, entertainment and commerce would be far easier to communicate.

For Congress and the FCC, this is the moment of truth. The IP Transition is gaining speed, and its ultimate completion is inevitable. But even inevitable advances in technological progress can be delayed significantly by over-regulation, denying some consumers the full benefits of the Internet ecosystem.

The FCC has an unavoidable role to play in the process. As communications markets are being simultaneously destroyed and recreated, regulations designed to dull the sharper edges of once-static and siloed technologies are now, as the agency recognizes, posing the very real danger of unintentionally holding back the progress of innovation. The agency must unravel itself from its complicated relationships with the affected industries, and quickly.

To begin with, the FCC should expeditiously grant pending petitions for trials to switchover PSTN networks to native IP. And, while the trials are underway, the FCC should begin planning a pro-transition agenda that can be enacted swiftly upon successful completion of the trials—or modified as necessary to adjust for any lessons learned.

Specifically, Congress and the FCC should:

1. Clearly define the IP Transition as a central Federal policy objective and make clear its intentions that VoIP be left unregulated.
2. The FCC should preempt state regulators' efforts to preserve PSTN networks beyond their useful lives to the long-term detriment of ratepayers.
3. Plan and set a date certain for PSTN retirement, based on the results of market trials being proposed and lessons learned during the successful transition from analog to digital television.
4. Retire legacy Federal regulations that are unintentionally slowing the transition to all-IP infrastructure and retarding the adoption of broadband, especially among rural and low-income populations.
5. Make clear that Title II regulations will never apply to IP networks.
6. Refrain from asserting Title I ancillary authority to impose mandated interconnection requirements on IP networks, and instead leave interconnection in the hands of the private parties exchanging the traffic.

There has been some progress in achieving these objectives, albeit slow. The National Broadband Plan, in particular, showed vision in urging the Commission to move immediately to accelerate the transition away from circuit-switched networks to native IP.¹⁷ As the Plan noted, "[r]egulations require certain carriers to maintain [legacy TDM networks]—a requirement that is not sustainable—and lead to investments in assets that could be stranded."¹⁸

In creating the Technology Transitions Policy Task Force, the FCC likewise took an important step to encourage the rapid transition "from special purpose to general purpose, from circuit-switched to packet-switched, and from copper to

¹⁵FCC, *Eighth Broadband Progress Report*, GN Docket 11–121 (Aug 21, 2012), ¶122 at p. 54, available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-12-90A1.pdf.

¹⁶Pew Internet and American Life Project, *Digital Differences*, April 13, 2012, available at <http://pewinternet.org/Reports/2012/Digital-differences/Main-Report/Internet-adoption-over-time.aspx>.

¹⁷See *Connecting America: The National Broadband Plan*, §4.5 at p. 59 (2010) ("National Broadband Plan"), available at <http://download.broadband.gov/plan/national-broadband-plan.pdf>.

¹⁸*Id.*

fiber and wireless-based networks.”¹⁹ Then-Chairman Genachowski noted at the time:

Technological transitions don’t change the basic mission of the FCC. But technology changes can drive changes in markets and competition. And many of the Commission’s existing rules draw technology-based distinctions. So the ongoing changes in our nation’s communications networks require a hard look at many rules that were written for a different technological and market landscape.²⁰

The point of these farsighted statements is both clear and accurate: Regulators should not pick winners and losers in the broadband ecosystem. But that truism does not mean the Commission should not take action to advance new technologies that are clearly superior.²¹ IP networks, in design and implementation, are in every relevant measure exponentially better than PSTN. Lawmakers and regulators should continue to hasten their adoption, focus on making the transition as smooth as possible for all consumers and refrain from placing regulatory impediments in the way of their success.

[. . .]

In encouraging the rapid transition of wireline providers to all-IP networks, Congress should heed the lessons of the earlier transition from analog to digital television (DTV). The DTV experience underscores the importance of accelerating deregulation of obsolete networks before consumers abandon them, of setting and sticking to a date certain, and to avoiding the temptation to prophylactically regulate for consumers harms that have yet to appear.

At its height in the 1970s, 93 percent of all American homes relied on antennas. But analog broadcast couldn’t compete with the quality or the quantity of cable channels. As digital technology expanded the scope and efficiency of cable and later fiber-based programming, it became clear that over-the-air broadcasters would likewise need to convert to digital signals to compete.

Shutting down analog broadcast, however, required government coordination. In 1996, Congress mandated the conversion from analog to digital broadcast in 1996, setting a deadline of 2006 and authorizing the FCC to coordinate the transition.

The coordinated switch to DTV was intended to make the highly-regulated broadcasters more competitive with the relatively unregulated cable industry. How? Digital TV lowered costs and created new opportunities for broadcasters. As part of the transition, for example, broadcasters traded their analog radio spectrum allocations in the 700 MHz band for a new 6 MHz block in the 600 MHz band. Because digital signals are more compressed, each 6 MHz block could be split and used for multiple channels, all of them capable of high-definition broadcast, as well as new mobile business opportunities for the broadcasters.

So far, however, few station operators have been able to make use of that capacity to offer extra channels or to repurpose underutilized spectrum for mobile or other premium services. That’s largely because, in the end, the DTV transition was delayed until 2009. By then, over-the-air television had already entered an unrecoverable dive in viewership and revenue.²² According to research from the Consumer Electronics Association, the decline in over-the-air audience became

¹⁹FCC, *FCC Chairman Announces Formation of “Technology Transitions Policy Task Force”*, (Dec. 10, 2012), <http://www.fcc.gov/document/fcc-chairman-announces-technology-transitions-policy-task-force>.

²⁰*Id.*

²¹In nearly every government provision of spectrum in the last hundred years, Congress has clearly picked what it felt were “better” technologies and used policy levers to promote their adoption. Similarly, by excluding broadband Internet access from Title II regulations in the 1996 Communications Act, Congress affirmatively and wisely promoted an unregulated market for IP-based services, and mandated the FCC to do the same. See, e.g., Communications Act of 1996, 47 U.S.C. §§ 153(24), 230, 706 (1996). See also *NCTA v. Brand X Internet Services*, 545 U.S. 967 (2005).

²²See Sam Schechner and Rebecca Dana, *Local TV Stations Facing a Fuzzy Future*, THE WALL STREET JOURNAL, Feb. 10, 2009, available at <http://online.wsj.com/article/SB123422910357065971.html>.

irreversible between 2005, when the transition should have happened, and 2009, when it finally did.²³

Delays in the DTV transition were largely the result of unfounded and exaggerated fears that some consumers would not be ready in time. A 2006 article in *Fortune*, for example, warned breathlessly that the DTV transition would “render about 70 million TV sets obsolete,” and that “for consumers with one of those 70 million sets—many of whom are likely to be poor, elderly or uneducated, being forcibly switched from one technology to another will be a nightmare.”²⁴

[. . .]

The reality, of course, was very different. Consumers who weren’t already cable or satellite subscribers and whose energy-inefficient tube television sets were too old to receive digital signals were barely inconvenienced, let alone “forcibly switched.”

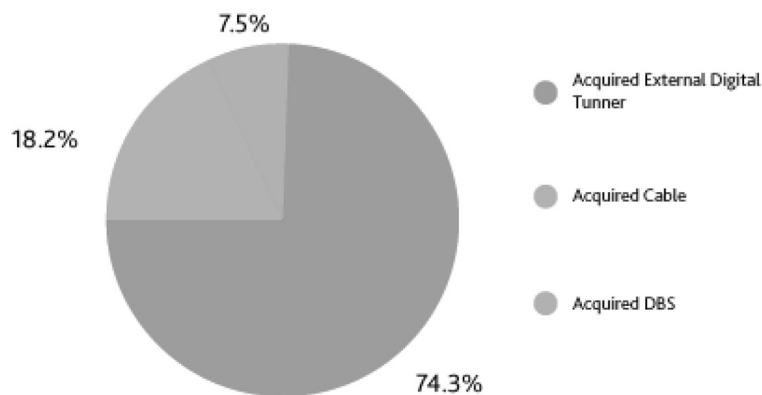
Many had already moved to cable or satellite by the time the DTV transition occurred. For the rest, all they had to do was to buy and attach small digital converter boxes to their old TVs. Under a plan implemented by the Department of Commerce, consumers could even apply for up to two \$40 coupons with which to purchase the converters, funded by proceeds from the 700 MHz spectrum auctions.

On the fateful day, June 12, 2009, according to Nielsen, almost no one was left without television service. As Figure 2 shows, nearly all “unready homes” had successfully made the transition by using the converter box, or by switching to digital cable or satellite. No television was rendered “obsolete,” let alone 70 million.²⁵

Figure 2—Consumers Adapted to the DTV Conversion

The Transitioned Television Set Route to Readiness – Total U.S.

Percent of Converters June 21, 2009



Source: The Nielsen Company

²³ CEA Study: *Consumers are Tuning Out Over-the-Air TV*, May 31, 2011, available at <http://www.cea.org/News/News-Releases/Press-Releases/2011-Press-Releases/20110531-CEA-Study-Consumers-Are-Tuning-Out-Over-t.aspx>.

²⁴ Marc Gunther, *Digital TV: Leaving Viewers in Limbo*, *FORTUNE*, Jan. 19, 2006, available at http://money.cnn.com/2006/01/04/technology/pluggedin_digitaltv/index.htm.

²⁵ Nielsen, *The Switch from Analog to Digital TV*, Nov. 2, 2009, available at <http://www.nielsen.com/us/en/newswire/2009/the-switch-from-analog-to-digital-tv.html>.

Delaying the transition by three years, however, blunted the potential of a coordinated and timely switchover in crucial ways. Consumers had more time to switch to cable or satellite to avoid dealing with the transition at all, imposing real damage on broadcasters. That loss of viewers makes it harder to this day for the broadcasters to offer new and competing products using their new spectrum and digital technology upgrades.

Ultimately, that translates to a loss to consumer of more competition in the video marketplace. Delays that were intended to protect consumers, in the end, did just the opposite.

As with DTV transition, however, ungrounded fears of what could go wrong could continue to delay the IP transition, with dangerous and unintended consequences for consumers—particularly those for whom advocates most claim to be looking out.

Question 2. Reform of the Universal Service Fund (USF)/creation of the Connect America Fund (CAF) is critically important because millions of Americans still lack access to high-speed broadband service in many areas of the country. According to the National Broadband Plan, broadband is available in 98 percent of the nation, but the national adoption rate, according to the National Telecommunications and Information Administration (NTIA) and Census data, is 72 percent. I believe it is important for all Americans to have access to high-capacity broadband service, and therefore, I am focused on policies that help us to reach 100 percent coverage of U.S. households. However, we have a limited amount of money that we can allocate as a nation to rural broadband deployment, and I believe we should prioritize funding to support buildout in unserved areas or areas below 4 mbps down/1 mbps. Typically, these areas are still unserved because of the high cost of deployment and the low population density. Understandably, this makes it difficult for private companies to deploy broadband in these areas, and it is also the reason why policymakers decided to create programs like USF/CAF—to serve hard-to-reach places in the country.

Question 2a. Do you believe CAF is adequately focused on broadband deployment in unserved areas? If so, how long do you think it will take to reach full deployment? If not, please explain what it would take to buildout unserved areas of our country given that we only have approximately \$4.5 billion/year through USF.

Question 2b. Is the pace of reform moving too slowly?

Answer. My experience with CAF is insufficient to comment on these questions. What is clear, however, is that there are direct economic and societal benefits that derive from access to high speed broadband. Efforts to foster more and faster broadband in areas that do not currently have access to same would seem important, and worthy of close analysis.

Though the FCC has done a worthy job in reforming USF over the last two years, there is clearly still much to be done. As recent announcements of settlements with Lifeline providers abusing the system makes clear, there is still considerable waste, inefficiency, fraud and corruption in the system.²⁶

Question 3. Based on my experience in Virginia, it is not possible to deploy fiber absolutely everywhere. Many areas of my state have granite rockbeds, which make it prohibitively expensive to deploy fiber. Therefore, I am supportive of cost effective deployment of broadband technology to reach universal coverage. Although I recognize that the focus of this hearing was on wireline issues, it seems to me that we should consider the best technologies based on our national goal of providing advanced communications services to all Americans.

Question 3a. Should the Federal Communications Commission (FCC) focus more resources on best-available technology for unserved areas or areas below 4/1? If so, please explain what else the FCC could do to improve broadband coverage to unserved areas. If not, please explain how we can reach full broadband deployment by focusing more on fixed services, at a reasonable cost to taxpayers and consumers.

Question 3b. Please describe what role you see for other technologies in terms of serving hard-to-reach areas in the near term. Could we be more technology-neutral in our Federal broadband funding programs?

Answer. I am not in a position to comment specifically on the effectiveness of Federal broadband funding programs or the FCC's role in improving coverage to those

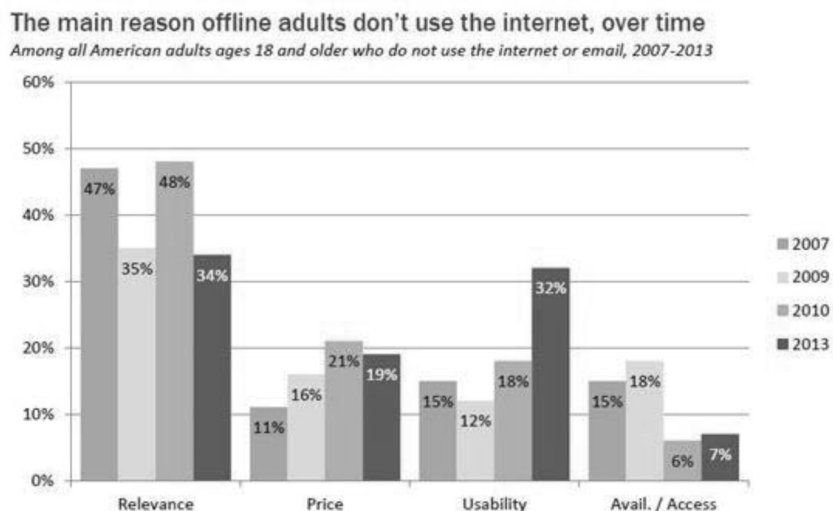
²⁶See Brendan Sasso, *FCC Moves to Fine 'Obamaphone' Companies \$14 Million*, THE HILL.COM, Oct. 1, 2013, available at <http://thehill.com/blogs/hillcon-valley/technology/325779-fcc-moves-to-fine-obamaphone-companies-14-million>.

remaining areas of the U.S. that do not have broadband access as that term is defined by the National Broadband Plan.

But there are clearly other technologies besides fiber optic cable that support broadband speeds. Cable, mobile, and satellite-based broadband all have important roles to play in both the middle-mile and last-mile Internet today, and will continue to do so. Broadband over power lines remains a high-potential option as well, especially for remote areas where power lines have already been deployed at high cost. While experimentation with this approach in the U.S. has largely stalled due to resistance and delays by the FCC to approve applications, it is not too late to restart the industry.

Access, however, is not the most urgent issue. Rather, it is adoption. In that sense, enabling the carriers to accelerate their transition to all-IP infrastructure would overcome many of the obstacles that keep 15 percent of American adults (mostly those over age 65 or adults without a high school diploma) from joining the Internet. According to the most recent Pew Internet Project survey, more than half of that group cite as their primary reason not to connect a lack of relevance to their needs or usability, rather than cost or availability. (See Figure 3.)²⁷

Figure 3—Obstacles to Internet Adoption



Source: Pew Research Center's Internet & American Life Project Surveys.

With IP-based telephony in place, however, the relevance for employment, education, health care, family life, entertainment and commerce would be far easier to communicate. A transition to all-IP networks, in other words, bring those Americans who have resisted the Internet revolution at least one step closer to adoption—if only as a side-effect.

As I wrote recently, the most current data on adoption issues suggests that the best use of limited government resources may not be subsidizing access or the build-out of network infrastructure in high-cost areas. Rather, it may be in public education:

[G]overnments can play a critical role in encouraging the few remaining Americans who have so far failed to see the benefit of Internet adoption. But in allocating limited public resources, it's essential to read the data for what it actually says before deciding how to proceed.

For example, the most-frequently cited reason given by Americans not to use the Internet, according to the Pew survey, is that they are “just not interested.” Is that because the Web really holds no relevance to them, or because the case for connectivity just hasn't been made? Given the increased importance of Inter-

²⁷ Kathryn Zickuhr, *Who's Not Online and Why*, PEW INTERNET AND AMERICAN LIFE PROJECT, September 25, 2013, available at http://pewinternet.org/~media/Files/Reports/2013/PIP_Offline%20adults_092513.pdf.

net technologies and protocols for basic communications, entertainment, education, employment, health care, and public safety, going online is becoming a crucial part of daily life, especially for the groups who today have the lowest levels of adoption. They just may not fully appreciate the value to them of doing so.

Governments could be much more effective in using their bully pulpit to make that case. The FCC's exceptional 2010 National Broadband Plan, for example, included detailed descriptions of the promise of the Internet to improve the lives of all Americans in each of these core areas. Yet the agency did almost nothing to promote the hard work of the plan's authors once the document was published.

It would cost little for the FCC and the rest of the administration to dust off the plan and highlight the vision it painted for a fully connected America. This could take the form of speeches, government websites, and public demonstrations coordinated with industry leaders. Much of that activity already exists; it just needs to be focused.

The FCC could also accelerate its ongoing efforts to remove regulatory roadblocks, especially at the state and local level, that cause unnecessary delay and cost in the deployment of additional and critical broadband infrastructure. Despite a modest "shot clock" established by the FCC in 2009, for example, permit requests for new cell towers and equipment changes on existing utility poles and buildings continue to drag on for months or even years, often held back or even denied based on little or no zoning-related justification. Laying new fiber-optic cable, likewise, often requires navigating a maze of local authorities.

The agency should also restart stalled efforts to begin trials for a final switch-over from the aging, obsolete public switched telephone network to all-IP networks.

A majority of Americans have already cut the cord to the old networks. Maintenance costs for providers who have to support both the old and new networks are inhibiting even more investments in broadband. Landline carriers have asked the FCC for permission to conduct trials on switching over the remaining customers to better and cheaper IP networks, but the agency has stalled, with special-interest groups gumming up the works.

Ironically, households still using analog telephone switches are also those most likely not to be Internet users. Accelerating the transition to IP networks would get those customers onto the Internet, at least for voice services.

These are the kind of government interventions that will actually help those few Americans who still don't see the value of Internet adoption. And they require no new laws—just a careful analysis of data that is already clear and convincing for those who are willing to read it.²⁸

Question 4. Would more targeted broadband mapping—at the address level, specifically—help to accelerate deployment to unserved areas? If not, please explain why less granular data models are sufficient to target deployment to unserved households. Do you believe the current level of data gathered by the National Broadband Map contributes to overbuilding? If not, please explain.

Answer. My experience with the National Broadband Map is insufficient to comment on these questions.

Question 5. As many experts have noted, there is "rural-rural divide" when it comes to the presence of broadband infrastructure in rural America. According to the FCC, more than 83 percent of the approximately 18 million Americans that lack access to residential fixed broadband at or above the basic level of acceptable service outlined in the National Broadband Plan live in areas served by price-cap carriers. The FCC attempted to address this disparity by establishing an incremental support component in the Phase I CAF Fund for price cap carriers. The initial support was established at \$300 million, but more than half of the allocated funds went unclaimed. Different types of carriers have expressed opinions about whether or not it was a good idea for the FCC to set aside this amount of money even though the bulk of the \$4.5 USF program was allocated to other types of carriers.

Question 5a. Regardless of your views on the Phase I Fund, do you think the FCC has done enough to provide coverage to the 14.9 million people who still lack any sort of basic broadband service?

²⁸ Larry Downes, *Who's Still Offline and Why? The Real Reasons*, CNET NEWS.COM, Sept. 30, 2013, available at http://news.cnet.com/8301-1023_3-57605169-93/whos-still-offline-and-why-the-real-reasons/.

Question 5b. If so, when do you think we can expect to provide broadband service to all Americans? If not, what else could the FCC do to provide universal broadband service?

Answer. My experience with CAF is insufficient to comment on these questions. Again, per my response to question 3 above, the more urgent issue is not access but adoption. The FCC did an admirable job of making the use cases for broadband adoption by all Americans in the National Broadband Plan, but has done little since its publication to underscore the benefits of broadband in education, employment, health care, public safety, citizenship, government, and energy. Thus, I believe it would be very productive if the FCC were to use its bully pulpit to educate American consumers on the value of having access to broadband.

However, I do not believe it is accurate to say that 18 million Americans “lack access to residential fixed broadband,” or that 14.5 million of that number are rural Americans. Those numbers, which originate with the FCC’s most recent Broadband Progress Report,²⁹ are both misleading and highly inaccurate.

For one thing, the FCC ended its data collection in June 2011. But network providers and their investors have spent billions in infrastructure improvements over the last two years, as they have every year since the broadband revolution began. Between 2010 and 2011 alone, when the FCC’s data runs out, the number of Americans without access to a single home broadband provider fell by 7.4 million, a number almost certain to have dropped further since 2011.

More important, the FCC report completely ignores the availability of mobile broadband. Although 4G and other networking technologies can and do deliver speeds that exceed the FCC’s broadband threshold, the agency excluded mobile entirely from its statistics on access, citing a lack of “reliable” data on precisely how many of the 19 million could or even do get service from mobile broadband providers.

Rather than estimate, the FCC simply counted the entire wireless industry as zero. Yet with the explosion in smartphone use, as every consumer knows, wireless broadband growth far exceeds that for wired broadband. Mobile carriers in the US, according to the same FCC report, invested more than \$25 billion in network improvements just in 2011, compared with \$18.6 billion in the 15 largest European economies combined.

Including data on mobile broadband access provided in the FCC’s report but left out of its calculations, the number of Americans without any home broadband provider falls as low as 5.5 million. That’s less than 2 percent of the population.

To put that number in perspective, consider that landline telephone service never achieved more than 95 percent adoption in American homes. Indeed, according to the U.S. Census Bureau, more than 3.5 million Americans still lacked complete indoor plumbing as recently as 2011. Yet universal telephone service has been the policy of the U.S. since the formation of the FCC in 1934. And public efforts to improve household sanitation predate the founding of the Republic.

So the fact that broadband Internet access and adoption are still less than 100 percent less than two decades after its invention, while unfortunate, is hardly a crisis. Even excluding mobile broadband, the FCC report found that 95 percent of American homes have access to a broadband connection, in most cases with two or more choices of provider. We can and will do better, but realistically, if herculean efforts over decades or even centuries have failed to achieve 100 percent adoption of more basic technologies, it seems unlikely that any intervention over any period of time will ultimately achieve complete Internet adoption, let alone at broadband speeds.

Question 6. There has been a great deal of discussion about the FCC’s models for CAF. Given that technology is advancing at a rapid rate, it seems like the FCC should be focused on establishing a cost model that is updated frequently enough to provide an accurate sense of the marketplace.

Question 6a. How important is the timeliness of the FCC’s proposed cost model in delivering service to unserved areas?

Question 6b. Do you agree with the revisions the FCC has made to its cost model? Does the cost model accurately predict needs/services under CAF? If not, or if you believe the FCC model should lock in rates for a longer period of time, please explain how a longer view would deliver broadband to unserved areas more quickly than an annualized model.

Answer. My experience with CAF is insufficient to comment on these questions.

²⁹FCC, *Eighth Annual Broadband Progress Report*, GN Docket No. 11–121 (August 14, 2012), available at <http://www.fcc.gov/reports/eighth-broadband-progress-report>.

Question 7. A report by the nonpartisan Congressional Research Service analysis captures one of the major challenges of USF reform as follows:

“Smaller, rural, rate-of-return carriers are particularly dependent on USF subsidies, and have expressed concern that the reforms that the USF Order will implement could place them under financial hardship. Many RUS telecommunications and broadband borrowers (loan recipients) receive high cost USF subsidies. In many cases, the subsidy received from USF helps provide the revenue necessary to keep the loan viable. The Telecommunications Infrastructure Loan program is highly dependent on high-cost USF revenues, with 99 percent (476 out of 480 borrowers) receiving interstate high-cost USF support. This is not surprising, given that the RUS Telecommunications Loans are available only to the most rural and high-cost areas (towns with populations less than 5,000). Regarding broadband loans, 60 percent of BIP (stimulus) borrowers draw from state or interstate USF support mechanisms, while 10 percent of farm bill (Rural Broadband Access Loan and Loan Guarantee Program) broadband borrowers receive interstate high-cost USF support. Thus, to the extent that USF may be reformed, this could have an impact on the viability of RUS telecommunications and broadband loans, and ultimately the overall financial health of the carrier.

Although the FCC included a waiver process in its USF Order for those carriers that felt they would be subject to significant economic stress, due to the reforms, many smaller carriers assert that the waiver process is too burdensome and difficult and that the requirements for qualifying for relief are too restrictive.”

Additionally, according to the U.S. Department of Agriculture, demand for RUS loan funds was only 37 percent of loan funds appropriated by Congress in FY 2012. This is indicative of the fact that the restructuring and uncertainty around USF/CAF reform could diminish the desirability of RUS broadband loans to borrowers going forward.

Question 7a. Given that the RUS and USF broadband programs share the goal of deploying broadband to rural America, and many RUS borrowers appear to be significant beneficiaries of USF as well, are these programs effectively targeted towards providing broadband to unserved areas of the nation?

Question 7b. Are these programs the most cost-effective way for Congress to fund rural broadband development? If so, please explain why. If not, please share any ideas you may have regarding a more cost-effective approach to encouraging broadband deployment.

Question 7c. Given that these two programs (USF and RUS) share the same goals, to what extent are they duplicative and to what extent are they complementary?

Question 7d. Do you think that the FCC waiver process, as designed and described above, is appropriate? If so, why? If not, what changes would you recommend?

Answer. My experience with RUS is insufficient to comment on these questions.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. MARK WARNER TO
GIGI B. SOHN

Question 1. With respect to the coming IP transition and advancing technology, which specific requirements from the Telecommunications Act of 1996 are the most important to maintain to ensure fair competition in the marketplace?

Question 1a. For example, the 1996 Act has clear interconnection requirements. Do you believe that these provisions are technology-neutral and should apply in an IP-based network? If not, please explain why not.

Question 1b. How important is it to maintain the legacy/copper communications network as we transition to IP? If so, for how long? If not, please explain why not.

Answer. The challenge of the IP transition is for the country to agree upon what fundamental principles should guide any future statutory revision process. The interconnection requirements of the Communications Act of 1996 are a good example. Section 251 is technology neutral. It applies to copper lines as equally as it does to interconnected VoIP. The fundamental principle at play is, does the network connect to everyone? For example, does a resident in Wise, Virginia know that when they make a call to family in Richmond or New York, the providers will connect as one large network? Smaller providers in rural areas should not have to pay a premium to connect to larger incumbent carriers. The phone system has always worked

as one network and this fundamental principle must be maintained as we make the transition to IP.

Additionally, competition provisions in the Communications Act provide for the connection of a variety of competitive services over the network that have brought new innovations to consumers, such as home security systems and telemedicine services. If we as a nation decide that we still value competitive services that ride over the network, then we must ensure that we maintain policies that protect competition for these innovative services.

In regard to how important it is important to maintain copper networks, it is important to point out that we are already transitioning away from copper networks. For example, there is no longer functioning copper networks on most of Fire Island, New York following the destruction of Hurricane Sandy. Verizon, the only network provider on the island, is deploying fiber to its consumers as a replacement. In other words, for communities like Fire Island, the transition has already happened.

It is not the material or technology of the network that is important, it is that the new network and the policies supporting it do not take a step back in quality and consumer protections that have expected for decades. Americans do not care if the wire running to their home is copper or fiber, they care that they don't lose access at a reasonable cost. Does it work reliably, and with the privacy and other consumer protections we expect? Will it work when there is a storm or a medical emergency? These are the sorts of questions that Americans are concerned with.

The question of "how long" is why real trials to answer these technological questions must be conducted by the FCC. Americans deserve to know that when the Federal Government allows companies to turn one network off, the replacement will not be a downgrade in service. We do not use our consumers as guinea pigs when it comes to access to critical communications. Once we determine what is required to ensure Americans are able to receive comparable service, we will have a sense of how long the dependability of TDM networks will be necessary.

Question 2. Reform of the Universal Service Fund (USF)/creation of the Connect America Fund (CAF) is critically important because millions of Americans still lack access to high-speed broadband service in many areas of the country. According to the National Broadband Plan, broadband is available in 98 percent of the nation, but the national adoption rate, according to the National Telecommunications and Information Administration (NTIA) and Census data, is 72 percent. I believe it is important for all Americans to have access to high-capacity broadband service, and therefore, I am focused on policies that help us to reach 100 percent coverage of U.S. households. However, we have a limited amount of money that we can allocate as a nation to rural broadband deployment, and I believe we should prioritize funding to support buildout in unserved areas or areas below 4 mbps down/1 mbps. Typically, these areas are still unserved because of the high cost of deployment and the low population density. Understandably, this makes it difficult for private companies to deploy broadband in these areas, and it is also the reason why policymakers decided to create programs like USF/CAF—to serve hard-to-reach places in the country.

Question 2a. Do you believe CAF is adequately focused on broadband deployment in unserved areas? If so, how long do you think it will take to reach full deployment? If not, please explain what it would take to buildout unserved areas of our country given that we only have approximately \$4.5 billion/year through USF.

Question 2b. Is the pace of reform moving too slowly?

Answer. I agree that the Connect America Fund (CAF) is an important piece of the puzzle of making broadband accessible to all Americans. The difficulty in structuring a fund to support broadband deployment is that the standard of what is considered adequate service is a moving target over time. The National Broadband Plan set a standard of 4mbps down/1mbps up because of the capabilities that such a service provides. However as we see new innovative, and higher bandwidth services become more widely available (*i.e.*, HD video conferencing) the definition of what is unserved is likely to change. The more funding that is available to support broadband deployment in unserved areas (CAF or otherwise), the faster the country will be able to reach near-full deployment as we have with phone service. This is why it is essential that the FCC complete the process of reforming the Universal Service Fund (USF), including reform of the contributions side in order to broaden the base of revenue for the fund.

While Public Knowledge supports the creation of the CAF, I understand that there have been many concerns raised by stakeholders about the formulas used to determine subsidy levels. It is important that the FCC work with stakeholders to address these concerns and ensure that the CAF is making efficient use of the billions of consumer's fees that make the CAF subsidies possible. The pace of reform

has slowed under a 3 member Commission, but I trust that the FCC will be able to resume the USF reform process when a permanent chair is sworn in.

Question 3. Based on my experience in Virginia, it is not possible to deploy fiber absolutely everywhere. Many areas of my state have granite rockbeds, which make it prohibitively expensive to deploy fiber. Therefore, I am supportive of cost effective deployment of broadband technology to reach universal coverage. Although I recognize that the focus of this hearing was on wireline issues, it seems to me that we should consider the best technologies based on our national goal of providing advanced communications services to all Americans.

Question 3a. Should the Federal Communications Commission (FCC) focus more resources on best-available technology for unserved areas or areas below 4/1? If so, please explain what else the FCC could do to improve broadband coverage to unserved areas. If not, please explain how we can reach full broadband deployment by focusing more on fixed services, at a reasonable cost to taxpayers and consumers.

Question 3b. Please describe what role you see for other technologies in terms of serving hard-to-reach areas in the near term. Could we be more technology-neutral in our Federal broadband funding programs?

Answer. Support for deployment of broadband should be technology neutral, but it should not be standards neutral. If a technology cannot meet certain basic standards that provide for basic IP enabled broadband services then it is not a wise investment for the FCC and other Federal broadband funding programs. Standards typically start with speed, but due to the transition of the phone system to all IP networks, it makes sense to include other quality standards such as latency and reliability. The Federal Government can improve broadband coverage by completing the transition of Federal programs such as USF to fully support broadband. As I addressed in question #2, it is essential that the FCC complete the process of reforming the Universal Service Fund (USF), including reform of the contributions side in order to broaden the base of revenue for the fund. Public Knowledge also supports the transition of the USF Lifeline program to broadband as we have done with eRate and the CAF. Technology neutral funding programs such as USF/CAF provide the flexibility to develop and invest in innovative ways to deploy in rural areas. For example, recent advances in the use of TV White Spaces (TVWS) have demonstrated the potential to provide a wireless broadband service in high-cost rural areas. The excellent propagation properties of the TVWS band combined with the lower cost of deployment makes this potential a possible solution for areas of Virginia and other states that face challenges to fiber deployment for various reasons.

Question 4. Would more targeted broadband mapping—at the address level, specifically—help to accelerate deployment to unserved areas? If not, please explain why less granular data models are sufficient to target deployment to unserved households. Do you believe the current level of data gathered by the National Broadband Map contributes to overbuilding? If not, please explain.

Answer. More granular data could make a real difference as the National Broadband Map is only as good as the data provided. National Broadband Map data is self-reported by broadband providers and some stakeholders have found the map to be inaccurate at times. Broadband providers may show that a census block is served when in truth it is only partially served. Americans living in the unserved portions of census blocks may suffer from a lack of connectivity due to the cost to deploy to their part of the census block, while the National Broadband Map and Federal programs using the Map ignore their lack of access.

While more granular data in broadband mapping would create a more accurate picture of the need for deployment, broadband providers will not deploy to streets and addresses that are currently unserved unless there is a business case to do so, or the Federal Government mandates that they serve everyone. The repeal of many state level Carrier of Last Resort (COLR) policies has reduced the commitment to rural phone deployment that drove broadband providers that offer phone service to deploy fully in service areas. As the IP transition continues, we must ensure that our policies remain committed to serving to all Americans. IP networks deployed as phone networks provide the added opportunity to bring high speed broadband services as well.

National Broadband Map data is provided by broadband providers at the census block level, the smallest geographic area used to track demographics before moving to the address level. If data from the providers show that there are unserved in a census block, it is unlikely that funding directed at these blocks would lead to overbuilding. However we should take into account that providers often must build in surrounding areas to make the new deployment profitable. While this additional de-

ployment create competition for neighboring providers, it benefits unserved Americans by making their newly deployed broadband affordable.

Question 5. As many experts have noted, there is “rural-rural divide” when it comes to the presence of broadband infrastructure in rural America. According to the FCC, more than 83 percent of the approximately 18 million Americans that lack access to residential fixed broadband at or above the basic level of acceptable service outlined in the National Broadband Plan live in areas served by price-cap carriers. The FCC attempted to address this disparity by establishing an incremental support component in the Phase I CAF Fund for price cap carriers. The initial support was established at \$300 million, but more than half of the allocated funds went unclaimed. Different types of carriers have expressed opinions about whether or not it was a good idea for the FCC to set aside this amount of money even though the bulk of the \$4.5 USF program was allocated to other types of carriers.

Question 5a. Regardless of your views on the Phase I Fund, do you think the FCC has done enough to provide coverage to the 14.9 million people who still lack any sort of basic broadband service?

Question 5b. If so, when do you think we can expect to provide broadband service to all Americans? If not, what else could the FCC do to provide universal broadband service?

Answer. As I addressed in question #2, it is essential that the FCC complete the process of reforming the Universal Service Fund (USF), including reform of the contributions side in order to broaden the base of revenue for the fund. While Public Knowledge supports the creation of the CAF, I understand that there have been many concerns raised by stakeholders about the formulas used to determine subsidy levels. It is important that the FCC work with stakeholders to address these concerns and ensure that the CAF is making efficient use of the billions of consumer’s fees that make the CAF subsidies possible. As the National Broadband Plan noted, Congress could choose to appropriate more funding to the CAF and other broadband deployment programs if they wished to accelerate the efforts beyond the limits of the \$4.5 million CAF.

Question 6. There has been a great deal of discussion about the FCC’s models for CAF. Given that technology is advancing at a rapid rate, it seems like the FCC should be focused on establishing a cost model that is updated frequently enough to provide an accurate sense of the marketplace.

Question 6a. How important is the timeliness of the FCC’s proposed cost model in delivering service to unserved areas?

Question 6b. Do you agree with the revisions the FCC has made to its cost model? Does the cost model accurately predict needs/services under CAF? If not, or if you believe the FCC model should lock in rates for a longer period of time, please explain how a longer view would deliver broadband to unserved areas more quickly than an annualized model.

Answer. As important as timeliness is to delivering critical broadband services, it is equally important for the FCC to get it right. As I have previously noted, while Public Knowledge supports the creation of the CAF, I understand that there have been many concerns raised by stakeholders about the formulas used to determine subsidy levels. It is important that the FCC work with stakeholders to address these concerns and ensure that the CAF is making efficient use of the billions of consumer’s fees that make the CAF subsidies possible.

At a high level, the CAF cost model must be equitable, taking into account both the variety regional difference that impact cost, as well as comparison of the costs of similarly situated companies. In the end however, if the amount of funds in the CAF remain relatively constant, there will always be winners and losers when models are adjusted.

Question 7. A report by the nonpartisan Congressional Research Service analysis captures one of the major challenges of USF reform as follows:

“Smaller, rural, rate-of-return carriers are particularly dependent on USF subsidies, and have expressed concern that the reforms that the USF Order will implement could place them under financial hardship. Many RUS telecommunications and broadband borrowers (loan recipients) receive high cost USF subsidies. In many cases, the subsidy received from USF helps provide the revenue necessary to keep the loan viable. The Telecommunications Infrastructure Loan program is highly dependent on high-cost USF revenues, with 99 percent (476 out of 480 borrowers) receiving interstate high-cost USF support. This is not surprising, given that the RUS Telecommunications Loans are available only to the most rural and high-cost areas (towns with populations less than 5,000). Regarding broadband loans, 60 percent of BIP (stimulus) borrowers draw from

state or interstate USF support mechanisms, while 10 percent of farm bill (Rural Broadband Access Loan and Loan Guarantee Program) broadband borrowers receive interstate high-cost USF support. Thus, to the extent that USF may be reformed, this could have an impact on the viability of RUS telecommunications and broadband loans, and ultimately the overall financial health of the carrier.

Although the FCC included a waiver process in its USF Order for those carriers that felt they would be subject to significant economic stress, due to the reforms, many smaller carriers assert that the waiver process is too burdensome and difficult and that the requirements for qualifying for relief are too restrictive."

Additionally, according to the U.S. Department of Agriculture, demand for RUS loan funds was only 37 percent of loan funds appropriated by Congress in FY2012. This is indicative of the fact that the restructuring and uncertainty around USF/CAF reform could diminish the desirability of RUS broadband loans to borrowers going forward.

Question 7a. Given that the RUS and USF broadband programs share the goal of deploying broadband to rural America, and many RUS borrowers appear to be significant beneficiaries of USF as well, are these programs effectively targeted towards providing broadband to unserved areas of the nation?

Question 7b. Are these programs the most cost-effective way for Congress to fund rural broadband development? If so, please explain why. If not, please share any ideas you may have regarding a more cost-effective approach to encouraging broadband deployment.

Question 7c. Given that these two programs (USF and RUS) share the same goals, to what extent are they duplicative and to what extent are they complementary

Question 7d. Do you think that the FCC waiver process, as designed and described above, is appropriate? If so, why? If not, what changes would you recommend?

Answer. The targeting of the RUS and USF programs is not effective due to the fact that both programs give to the same projects. Loans should be offered to borrowers based on the ability of companies to create profits and pay them back, not based on the Federal Government's ability to provide the funding to pay itself back through CAF grants. While the reforms of the USF/CAF have created uncertainty for these loans, perhaps this will provide RUS and the FCC the opportunity to gradually create reasonable rules to eliminate the overlap of their borrowers and grantees.

Keeping the two group separate would be a more cost-effective way of funding broadband deployment. Given the high cost of deployment, it would make more sense to structure RUS loans and the CAF in a more complementary way. It is appropriate for the FCC to have designed a waiver process to help the two agencies transition away from their overlapping financial arrangements. It is difficult for this transition process to be painless, but it is important to be clear that, in the end, companies and the government will no longer structure Federal loans based on the expectation of receiving a Federal grant.